Catalogue no. 81-582-G
ISSN 1927-6257

Education Indicators in Canada

# Handbook for the Pan-Canadian Education Indicators Program

May 2013

Tourism and the Centre for Education Statistics Division
Main Building, Room 2001, Ottawa, K1A 0T6

Telephone: 1-800-263-1136

Statistics Canada | Statistique Canada

Canada

cmec
Council of Ministers of Education, Canada | Conseil des ministres de l'Éducation (Canada)

## How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

**email** at infostats@statcan.gc.ca,

**telephone**, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following toll-free numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-877-287-4369

**Depository Services Program**

- Inquiries line 1-800-635-7943
- Fax line 1-800-565-7757

## To access this product

This product, Catalogue no. 81-582-G, is available free in electronic format. To obtain a single issue, visit our website, www.statcan.gc.ca, and browse by "Key resource" > "Publications."

## Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "About us" > "The agency" > "Providing services to Canadians."

Published by authority of the Minister responsible for Statistics Canada

© Canadian Education Statistics Council, 2013.

All rights reserved. Use of this publication is governed by the Statistics Canada Open Licence Agreement (http://www.statcan.gc.ca/reference/licence-eng.html).

Cette publication est aussi disponible en français.

## Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

## Standard symbols

The following symbols are used in Statistics Canada publications:

| | |
|---|---|
| . | not available for any reference period |
| .. | not available for a specific reference period |
| ... | not applicable |
| 0 | true zero or a value rounded to zero |
| $0^s$ | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| $^p$ | preliminary |
| $^r$ | revised |
| x | suppressed to meet the confidentiality requirements of the *Statistics Act* |
| $^E$ | use with caution |
| F | too unreliable to be published |
| * | significantly different from reference category ($p < 0.05$) |

# Education Indicators in Canada

## Handbook for the Pan-Canadian Education Indicators Program

May 2013

© 2013 Canadian Education Statistics Council

Permission is granted for non-commercial reproduction related to educational purposes, provided there is a clear acknowledgement of the source. Otherwise, no part of this publication may be reproduced or transmitted in any form without prior permission from the Canadian Education Statistics Council, 95 St. Clair Ave. West,Suite 1106, Toronto, Ontario, M4V 1N6.

• • • 2013

Catalogue no. 81-582-X
ISSN 1927-6257

Frequency: Occasional

Ottawa, Toronto

Également offert en français sous le titre : *Indicateurs de l'éducation au Canada : Manuel pour le programme d'indicateurs pancanadiens de l'éducation*, mai 2013.

**Note of appreciation**

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

# Table of contents


Acronyms and abbreviations 5

Introduction 7

SECTION A: A portrait of the school-age population 9

**A1. Population size** **9**

**Total Canadian population** Table A.1.1 **9**

**Population with Aboriginal identity** Tables A.1.2.1 and A.1.2.2 **11**

**A3. Low income** Tables A.3.1.1 through A.3.1.3 and Table A.3.2 **17**

SECTION B: Financing education systems 21

**B2. Public and private expenditure on education** **23**

**Average expenditures per household** Table B.2.7 23

**Average university tuition fees** Tables B.2.9 and B.2.11 25

**University revenues** Table B.2.12 27

**University expenditures** Tables B.2.13 and B.2.14 29

SECTION C: Elementary-secondary education 35

**C1. Early years and school readiness** Tables C.1.1 and C.1.2 **35**

**C2. Elementary-secondary school: enrolments and educators** Tables C.2.1 through C.2.7 **37**

**C4. Student achievement** **43**

**Programme for International Student Assessment (PISA)** Tables C.4.2, C.4.4, C.4.5, C.4.10 and C.4.17 43

**Pan-Canadian Assessment Program (PCAP)** Tables C.4.13, C.4.14, C.4.15, C.4.16, C.4.18, C.4.19 and C.4.20 47

**C5. Information and communications technologies (ICT)** Tables C.5.1, C.5.6, C.5.7 and C.5.8 **51**

SECTION D: Postsecondary education 55

**D1. Postsecondary enrolment** **55**

**Registered apprentices** Tables D.1.1 through D.1.3 55

**Colleges** Tables D.1.4 and D.1.7 57

**Universities** Tables D.1.5 and D.1.6 59

**D2. Postsecondary completions and graduation rates** **61**

**Registered apprenticeship completions** Tables D.2.1 and D.2.2 61

**Colleges** Tables D.2.5 and D.2.9 63

**Universities** Tables D.2.3 and D.2.8 65

**D3. University educators** Tables D.3.1 through D.3.4 **69**

**D4. Research and development** Tables D.4.1 through D.4.5 **71**

**D6. Educational attainment** Table D.6.3 **77**

SECTION E: Transitions and outcomes 79

**E1. Transitions to postsecondary education** **79**

**Participation in education** Tables E.1.1, E.1.2.1 and E.1.2.2 79

**Moving from high school to postsecondary education** Tables E.1.4 through E.1.6 81

**E2. Transitions to the labour market** **85**

**Students and work** Tables E.2.1 through E.2.3 85

**E3. Labour market outcomes** **89**

**Unemployment rates** Tables E.3.1 through E.3.3 89

Appendix 1: Structure of education and training in Canada 93

Project team 99

# Acronyms and abbreviations

| | |
|---|---|
| **BTSD** | basic training for skill development |
| **CANSIM** | Canadian Socio-economic Information Management System |
| **CAUBO** | Canadian Association of University Business Officers |
| **CCSIS** | Community College Student Information System |
| **CEGEP** | Collège d'enseignement général et professionnel |
| **CES** | Centre for Education Statistics |
| **CESC** | Canadian Education Statistics Council |
| **CFI** | Canada Foundation for Innovation |
| **CIHR** | Canadian Institutes of Health Research |
| **CIP** | Classification of Instructional Programs |
| **CMA** | census metropolitan area |
| **CMEC** | Council of Ministers of Education (Canada) |
| **CPI** | Consumer Price Index |
| **CV** | coefficient of variation |
| **EAG** | Education at a Glance |
| **ESES** | Elementary-Secondary Education Survey (formerly ESESP - Elementary-Secondary Education Statistics Project ) |
| **FINCOL** | Financial Statistics of Community Colleges and Vocational Schools |
| **FIUC** | Financial Information of Universities and Colleges Survey |
| **FOG** | Follow-up Survey of Graduates |
| **FTE** | full-time equivalent |
| **GERD** | gross domestic expenditures on research and development |
| **GDP** | gross domestic product |
| **GED** | general education diploma |
| **HRSDC** | Human Resources and Skills Development Canada |
| **IALSS** | International Adult Literacy and Skills Survey |
| **ICT** | information and communication technologies |
| **ILO** | International Labour Organisation |

| | |
|---|---|
| **INES** | Indicators of Educational Systems |
| **ISCED** | International Standard Classification of Education |
| **JRT** | job readiness training |
| **LFS** | Labour Force Survey |
| **LICO** | low-income cutoff |
| **NGS** | National Graduates Survey |
| **NSERC** | Natural Sciences and Engineering Research Council of Canada |
| **NLSCY** | National Longitudinal Survey of Children and Youth |
| **OECD** | Organisation for Economic Co-operation and Development |
| **OAC** | Ontario Academic Credits |
| **PCAP** | Pan-Canadian Assessment Program |
| **PCEIP** | Pan-Canadian Education Indicators Program |
| **PIAAC** | Programme for the International Assessment of Adult Competencies |
| **PISA** | Programme for International Student Assessment |
| **PPVT-R** | Peabody Picture Vocabulary Test-Revised |
| **PSIS** | Postsecondary Student Information System |
| **R&D** | research and development |
| **RAIS** | Registered Apprenticeship Information System |
| **SAIP** | School Achievement Indicators Program |
| **SCF** | Survey of Consumer Finances |
| **SCI** | Survey of Colleges and Institutes |
| **SHS** | Survey of Household Spending |
| **SLID** | Survey of Labour and Income Dynamics |
| **SSGS** | Secondary School Graduates Survey |
| **SSHRC** | Social Sciences and Humanities Research Council of Canada |
| **TLAC** | Tuition and Living Accommodation Costs for Full-time Students at Canadian Degree-granting Institutions |
| **UCASS** | University and College Academic Staff System |
| **YITS** | Youth in Transition Survey |

# Introduction

This handbook, based on the first edition, entitled *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007*, was developed to update the general descriptions for the indicators of the Pan-Canadian Education Indicators Program (PCEIP) as new sets of tables are released. It complements the tables, and both share a common objective: to provide consistent and high-quality information on education in Canada. The up-to-date array of indicators helps support informed decision-making, policy formulation and program development throughout the country.

This companion Handbook is a reference document that gives readers a broad understanding of each indicator, rather than the very specific methodological descriptions that would be necessary to reproduce the indicator using the raw data.

The PCEIP tables highlight the most recent available data in a series of detailed data tables and include five broad indicator sets:

- A A portrait of the school-age population
- B Financing education systems
- C Elementary and secondary education
- D Postsecondary education
- E Transitions and outcomes.

The following information forms the main body of the Handbook, and is presented for each of the PCEIP indicators:

- A brief, general description.
- The major concepts and definitions used.
- An overview of the methodology.
- A short review of any major data limitations, including interjurisdictional comparability as needed.
- The data source(s) used to produce the indicator.

The relevant data tables are cited for the reader's information.

An appendix that presents the structure of education and training in Canada concludes the Handbook.

SCHOOL BUS

# SECTION A:
# A portrait of the school-age population

A1

## A1. Population size

### Total Canadian population

#### Table A.1.1

Overall, Indicator **A1**, Population size, provides information on the school-age population in Canada. This sub-indicator examines the evolution in the size of the estimated and projected Canadian pre-school and school-age population, and the population aged 25 to 29 (Table A.1.1).

#### Concepts and definitions

- For the indicator on population size, the **school-age population** includes all individuals aged 5 to 24, whether or not they were attending school. Estimates and projections are also provided for the pre-school-age population (aged 0 to 4), and the population aged 25 to 29. The following **age groups**, which align with the standard used by the Organisation for Economic Co-operation and Development (OECD) and Statistics Canada, have been adopted for PCEIP: 5 to 14; 15 to 19; 20 to 24; and 25 to 29.

- The **scenario** used for the total Canadian population projection is the **medium-growth, historical migration trends scenario**, which is based on the following assumptions: a total fertility rate constant of 1.7 births per woman; a Canadian life expectancy that reaches 84.0 years for males and 87.3 years of age for females in 2036; a constant national effective of 252,500 immigrants for the first three years of the projection, and then a constant national immigration rate of 0.75%; interprovincial migrations based on the trends observed between 1981 and 2008.

- **Interjurisdictional migration** is the movement of population from one province or territory to another, involving a permanent change in residence. A person who takes up residence in another province/territory is an out-migrant with reference to the province/territory of origin and an in-migrant with respect to the province/territory of destination. Net migration is the difference between in- and out-migrants.

#### Methodology

- The population data for 1991 through 2006 are from Statistics Canada's demographic estimates program; more precisely, final intercensal estimates for 1991 through 2001, and final postcensal estimates for 2006. Postcensal estimates are based on the latest census counts adjusted for census net undercoverage, incompletely enumerated Indian reserves and for estimated population growth that occurred since that census. Intercensal estimates are based on postcensal estimates and census counts that have been adjusted preceding and following the year considered.

- The population data for the year 2011 and after are from the demographic projections for Canada, provinces and territories, 2009 to 2036. The base population for these projections is from the postcensal estimates of population for Canada, provinces and territories, as of July 1, 2009.

#### Limitations

- Although commonly used for planning purposes, population projections should be interpreted with caution as they are based on assumptions about the future course of demographic components. For instance, fertility is the main determinant of the school-age population and it may not remain stable over the next 25 years as assumed.

- The interpretation of projections at the jurisdictional level should be done with special care because these estimates are sensitive to interjurisdictional migration, a demographic component that is generally volatile.

## Data sources

- Estimates of population, Demography Division, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3601

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3601&lang=en&db=imdb&adm=8&dis=2

- Population projections for Canada, the provinces and territories, 2009 to 2036, Demography Division, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3602

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3602&lang=fr&db=imdb&adm=8&dis=2

A1

# Population with Aboriginal identity

## Tables A.1.2.1 and A.1.2.2

Overall, Indicator **A1**, Population size, provides information on the school-age population in Canada. This sub-indicator provides estimates and projections of the population aged 0 to 29 with Aboriginal identity, as well as the proportion of the total Canadian population with Aboriginal identity, by age group, for Canada and for the provinces/territories (Table A.1.2.1 and Table A.1.2.2).

## Concepts and definitions

- For the indicator on population size, the **school-age population** refers to all individuals aged 5 to 24, whether or not they were attending school. The estimates and projections presented for the population with Aboriginal identity also include the pre-school-age population (aged 0 to 4), as well as the population aged 25 to 29. Data are presented for the following age groups: 0 to 29 overall; 0 to 4, 5 to 14, 15 to 19, 20 to 24, and 25 to 29.

- The **Aboriginal identity** population refers to individuals who, on the Census of Population, said they were North American Indian, Métis or Inuit, and/or were a Treaty Indian or Registered Indian as defined by the *Indian Act* of Canada, and/or were members of an Indian band or First Nation. [1]

- Population **estimates** represent the number of people who reported Aboriginal identity in the 2006 Census, adjusted for census undercount and partially enumerated reserves.

- A **population projection** refers to the future population size resulting from a set of assumptions regarding the demographic and non-demographic components of growth. These assumptions consider the populations at both the outset of the projections and the future evolution of the components likely to affect the size and composition of the populations. For the Aboriginal population, assumptions were grouped together in a limited number of **scenarios** designed to show what would happen in the coming years if the underlying assumptions were proven correct.

  Projections are presented for 2011, 2016, 2021, 2026 and 2031, for four scenarios (see the "Methodology" section).

- **Fertility** refers to the demographic phenomenon in relation to live births which can be considered from the point of view of women, the couple and occasionally men.

- **Ethnic mobility** is "the phenomenon by which individuals and families change their ethnic affiliation."[2] Ethnic mobility has two components: intragenerational and intergenerational.[3]

  **Intergenerational** ethnic mobility results from a change in ethnic affiliation between parents and their children, with the parent(s) not having the same ethnic affiliation as the child(ren).

  **Intragenerational** ethnic mobility results from a change in an individual's ethnic affiliation over time.

1. The "Concepts and definitions" used in this handbook section on the population with Aboriginal identity are cited or adapted from the Glossary entries in the 2011 Statistics Canada report *Population Projections by Aboriginal Identity in Canada, 2006 to 2031* (catalogue number 91-552), prepared by Éric Caron Malenfant and Jean-Dominique Morency.
2. Guimond, Éric. 2003. "Fuzzy Definitions and Population Explosion: Changing Identities of Aboriginal Groups in Canada", in Newhouse, D. and Peters, E. J., editors, *Not strangers in these parts: Urban Aboriginal peoples*, Policy Research Initiative, Government of Canada.
3. Boucher, Alexandre, Norbert Robitaille and Éric Guimond. 2009. "La mobilité ethnique intergénérationnelle des enfants de moins de 5 ans chez les populations autochtones, Canada, 1996 et 2001", in *Cahiers québécois de démographie*, volume 38, no. 2.

- **Net undercoverage** represents the difference between the number of persons who were covered by the Census of Population, but who were not enumerated (undercoverage) and the number of persons who were enumerated when they should not have been, or who were enumerated more than once (overcoverage).
- **Microsimulation**, unlike population estimates and projections done using the cohort component method, simulates the demographic destiny of individuals one by one. The method is based on multiple random drawing at the individual level rather than on aggregated data applied at the population group level.

## Methodology

- The projections for this sub-indicator were provided by the Demosim team in the Demographic Analysis and Projections Section of Demography Division at Statistics Canada. The population estimates presented for 2006 represent the number of people who reported Aboriginal identity in the 20% sample of the 2006 Census, adjusted to take into account net undercoverage in the census by age, sex, and province/territory, and incompletely enumerated reserves.
- The microdata file for the 2006 Census also serves as the base population for projections of populations according to Aboriginal identity to 2031.
- The Demosim microsimulation population projections model was used to develop the projections for both the Aboriginal and non-Aboriginal populations shown in Tables A.1.2.1 and A.1.2.2. Assumptions for the Aboriginal population are from Scenarios 1, 2, 3 and 4 of the *Population Projections by Aboriginal Identity in Canada, 2006 to 2031*, Statistics Canada Catalogue no. 91-552. For the non-Aboriginal population, assumptions are from the reference scenario of the *Projections of Diversity of the Canadian Population, 2006 to 2031*, Statistics Canada Catalogue no. 91-551.

| Assumptions regarding Aboriginal peoples | Scenario 1<br>No ethnic mobility and constant fertility | Scenario 2<br>No ethnic mobility and converging fertility | Scenario 3<br>Constant ethnic mobility and constant fertility | Scenario 4<br>Constant ethnic mobility and converging fertility |
|---|---|---|---|---|
| Fertility | Constant level[1] and maintenance of the gap in fertility between Aboriginal and non-Aboriginal populations | Converging: decrease of 50% in the gap between the Aboriginal and non-Aboriginal populations | Constant level[1] and maintenance of the gap in fertility between Aboriginal and non-Aboriginal populations | Converging: decrease of 50% in the gap between the Aboriginal and non-Aboriginal populations |
| Intragenerational ethnic mobility | No intragenerational ethnic mobility[2] | | Constant ethnic mobility based on 1996-to-2006 levels | |
| Intergenerational ethnic mobility | Constant, based on 2006 Census | | | |
| Registered Indian status transmission | Constant, based on 2006 Census | | | |
| Mortality | Moderate life expectancy and maintenance of the gap between the Aboriginal and non-Aboriginal populations | | | |
| International migration | Zero international net migration for Aboriginal population | | | |
| Internal migration | Average: estimated in 1995/1995, 2000/2001, 2005/2006 | | | |
| C-3 registration (related to registered Indian status) | No C-3 registration | | | |
| Education | A progressive levelling off of trends, and constant graduation gaps between the sub-groups that comprise the population | | | |
| Labour force participation | Trends 1999 to 2008, and constant participation gaps between the sub-groups that comprise the population | | | |
| **Assumptions regarding non-Aboriginal peoples** | **Scenario 1**<br>No ethnic mobility and constant fertility | **Scenario 2**<br>No ethnic mobility and converging fertility | **Scenario 3**<br>Constant ethnic mobility and constant fertility | **Scenario 4**<br>Constant ethnic mobility and converging fertility |
| Fertility | An average fertility of approximately 1.7 children per woman at the national level at the outset, and constant fertility gaps between the sub-groups that comprise the population | | | |
| Mortality | A moderate increase in life expectancy, and constant mortality gaps between the sub-groups that comprise the population | | | |
| Immigration | A constant immigration rate at 7.5 per thousand, with the composition by country of birth being representative of the immigration observed during the period from 2001 to 2006 | | | |
| Emigration | A total emigration rate constant at the starting rate of 1.6 per thousand, and constant emigration gaps between the subgroups that comprise the population | | | |
| Internal migration | Average: estimated in 1995/1995, 2000/2001, 2005/2006 | | | |

1. In 2005/2006, the total fertility rate was estimated at approximately 2.7 children for women of Inuit identity, 2.4 for those with North American Indian identity, and 1.8 for women of Métis identity, compared with 1.6 for non-Aboriginal women.

2. In other words, within the Canadian-born, non-Aboriginal population, any persons likely to report Aboriginal identity had already done so prior to 2006.

## Limitations

- The population reporting an Aboriginal identity should not be confused with the population reporting Aboriginal ancestry. The latter concept refers to the ethnic or cultural group of a person's ancestors, but it does not mean that the person identifies with the Aboriginal group to which his/her ancestors belonged.[4]
- Although commonly used for planning purposes, population projections should be interpreted with caution as they are based on assumptions about the future course of demographic components.

## Data sources

- Census of Population, 2006, Statistics Canada.
- Special tabulations provided by the Demosim team in the Demographic Analysis and Projections Section of Demography Division, Statistics Canada.
- *Population projections by Aboriginal identity in Canada, 2006 to 2031*, Statistics Canada Catalogue no. 91-552; http://www.statcan.gc.ca/pub/91-552-x/91-552-x2011001-eng.htm.
- *Projections of Diversity of the Canadian Population, 2006 to 2031*, Statistics Canada Catalogue no. 91-551; http://www.statcan.gc.ca/pub/91-551-x/91-551-x2010001-eng.htm.

4. As stated in "Box 1: A few concepts" in the Methods and concepts section of *Population Projections by Aboriginal Identity in Canada, 2006 to 2031*, Statistics Canada Catalogue number 91-552-X.

A2

# A2. Cultural diversity

This section of the handbook will be updated in an upcoming issue. For information on the methodology of this indicator, please consult *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007.*

http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/81-582-g/81-582-g2008001-eng.pdf

05

A3

# A3. Low income

## Tables A.3.1.1 through A.3.1.3 and Table A.3.2

Indicator **A3** provides information on the proportion of the population aged 0 to 24 living in low-income circumstances. The percentage of 0- to 24-year-olds in low income situations is presented by age group and type of living arrangement (Table A.3.1.1, Table A.3.1.2 and Table A.3.1.3). The length of time the individuals aged 5 to 24 have been living in such situations is presented in Table A.3.2. These data are presented for Canada and the provinces.

## Concepts and definitions

- This indicator refers to the pre-school as well as the **school-age population** and includes all individuals aged 0 to 24, whether or not they are attending school. The following **age groups** have been adopted for PCEIP: 0 to 4, 5 to 19 and 20 to 24.
- Two **living arrangements** are presented for the population aged 0 to 4 in low-income circumstances: living with two parents or living with a lone parent. For the population 5 to 24, three types of living arrangements are presented: living with two parents, living with a lone parent, and not living with any parent.
- The distribution of the population aged 5 to 24 by **number of years in low income** is categorized as follows: never in low income, up to one year in low income, and more than one year in low income.
- **Parents** captures biological and step-parents, as well as those who have adopted children. **Lone parent** refers to guardians and adults, regardless of marital status, without a partner but with children in their care.
- **Low income** is determined using Statistics Canada's **low-income cutoffs (LICOs)**, which indicate when a family may be in "straitened circumstances." This means that the family is likely to spend 20% more of its net income on basic items such as food, shelter and clothing than the average family, which leaves less money available for other expenses such as health, education, transportation and recreation. LICOs are calculated for families and communities of different sizes.

## Methodology

- Data for this indicator are drawn primarily from the **Survey of Labour and Income Dynamics (SLID)**, an important source for income data for Canadian families, households and individuals. Introduced in 1993, SLID provides an added dimension to traditional surveys on labour market activity and income: the changes experienced by individuals and families through time. In 1998, SLID officially replaced the annual Survey of Consumer Finances (SCF) as the main source of information on family income.
- After-tax low-income cut-offs (LICOs), which better reflect the income a family has to spend on basic and other items, were used to report the percentage of children living in low-income families and the distribution by number of years in low income. LICOs are updated annually to reflect increases in the cost of living. They are also updated periodically to reflect changes in family spending patterns.
- Low-income rates are calculated for families with all members of an economic family having the same low-income status. An economic family is defined as a group of two or more persons related by blood, marriage, common-law or adoption, who live in the same dwelling.

## Limitations

- There is no internationally accepted standard for measuring "poverty", nor is there an official definition of poverty in Canada. LICOs provide one of many possible measures to monitor trends in the relative economic well-being of Canadian families.
- The Survey of Labour and Income Dynamics (SLID) was designed to follow individuals for six years; therefore, the income of a given family may be estimated for a maximum of six consecutive years using data from SLID.
- The feasibility of developing low income indicators for the Aboriginal population using SLID was explored. However, the Aboriginal identifier variable used in SLID is not comparable with that used in the census or in the Labour Force Survey (LFS). The identifier used in SLID is based on Aboriginal ancestry and Treaty/ Registered Indian status, while the identifier used in the census and the LFS is based on Aboriginal self-identification. Moreover, the sample size of Aboriginal children aged 5 to 24 in low income in Canada is too small to support a breakdown by family characteristics and by province. And, most importantly, SLID is not recommended by subject matter experts in the Social and Aboriginal Statistics Division at Statistics Canada as a reliable source of information on the Aboriginal population.

## Data sources

- Survey of Consumer Finances, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3502.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3502&lang=en&db=imdb&adm=8&dis=2

- Survey of Labour and Income Dynamics, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3889.

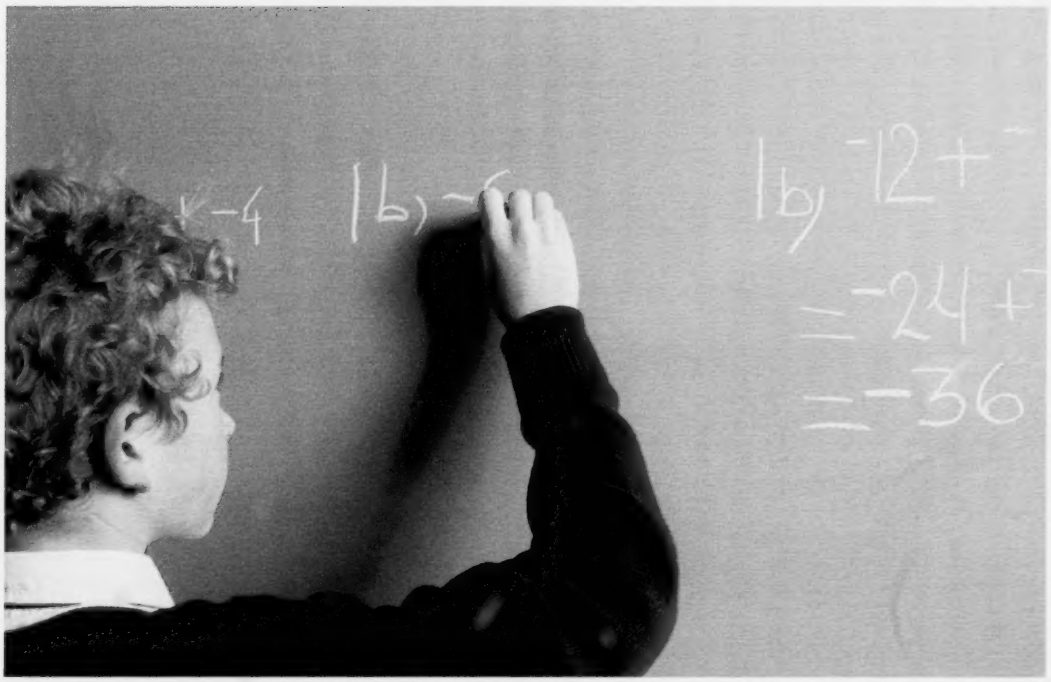
  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3889&lang=fr&db=imdb&adm=8&dis=2

A4

# A4. Family background

This section of the handbook will be updated in an upcoming issue. For information on the methodology of this indicator, please consult *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007.*

http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/81-582-g/81-582-g2008001-eng.pdf


-4
b) -6
b) -12+
=-24+
=-36

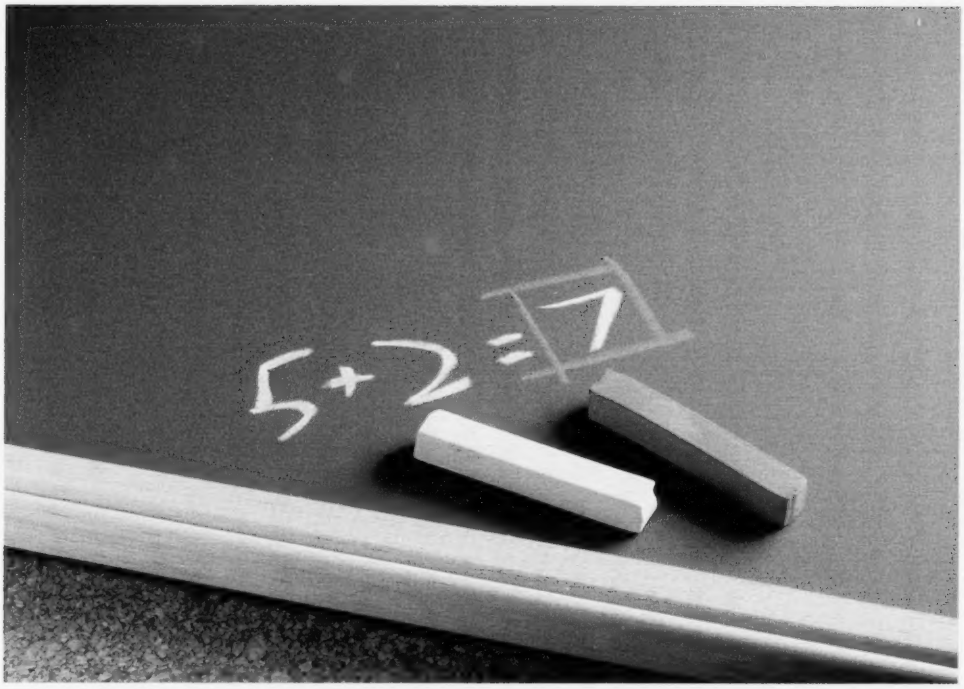
# SECTION B:
# Financing education systems

B1

## B1. Total expenditure on education

For information on the methodology of this indicator, please consult *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007.*

http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/81-582-g/81-582-g2008001-eng.pdf


5+2=7

# B2. Public and private expenditure on education

## Average expenditures per household

### Table B.2.7

This subset of Indicator **B2** (total education expenditure in Canada) presents information on the percentage of households incurring education expenditures and the average expenditure per household, in current dollars (Table B.2.7). Data are from the Survey of Household Spending (SHS).

### Concepts and definitions

- **Household** refers to a person or a group of persons who occupy a private dwelling and do not have a usual place of residence elsewhere in Canada.

- **Percentage of households reporting educational expenses** was calculated by dividing the number of households that incurred educational expenses by the total number of private households, then multiplying by 100.

- **Expenditures on education** are presented for the following four categories: supplies (all levels); textbooks (all levels); tuition (pre-elementary and elementary-secondary); and tuition (postsecondary).

  For supplies, textbooks and tuition fees, the SHS asks about spending on kindergarten, nursery school, elementary and secondary education, and postsecondary education (e.g., university, trade, and professional courses). The survey also asks households to report spending on other courses and lessons (e.g., music, dancing, sports, crafts), and other educational services (e.g., tutoring, rental of school books, equipment); driving lessons are excluded. The data include special and private schools, but exclude day care and lodging expenses.

- **Average education expenditure per household** was calculated by dividing the total amounts of household educational expenditure by the total number of private households that incurred spending in one or more of the four expenditure categories in a given calendar year. In other words, this measure reflects average spending on education only for the households that actually incurred such costs.

- All education expenditures are presented in **current dollars**. To convert this current dollar data to constant dollar amounts for comparison over time, it is recommended that the Consumer Price Index at the Canada level be used, for both national and provincial-level conversions. For the index and further details on converting, see Table F.1.3.

### Methodology

- The **Survey of Household Spending (SHS)** is carried out annually across Canada in private households in the 10 provinces. Data for the territories are available every other year starting with 2001. The survey covers about 98% of the population of the ten provinces. The main purpose of the survey is to obtain detailed information about household spending during the reference year (previous calendar year).

- The following groups are excluded from the SHS: (1) those living on Indian reserves and crown lands; (2) official representatives of foreign countries living in Canada and their families; (3) members of religious and other communal colonies; (4) members of the Canadian Forces living in military camps; (5) people living in residences for senior citizens; and (6) people living full-time in institutions; e.g., inmates of penal

institutions and chronic care patients living in hospitals and nursing homes.

- The sample size for 2008 was 28% smaller than that used for the 2007 SHS. The reduction of the sample size compared with previous years will have an impact on the data quality; in particular, the variance will, in most cases, be larger than before.
- In 2007, in order to reduce respondent burden, new screening questions were added to the SHS questionnaire for some categories. For a few categories, including education, this change resulted in a lower than expected percentage reporting and may have affected the average expenditures for some items in those categories.
- Beginning with 2006 data, the SHS has removed the distinction between full-year and part-year household members. Spending data is collected for the reference year for all members of the household present at the time of the interview. Since the standard tables prior to 2006 were based on full-year households only, in order to maintain comparability, data for 1997 to 2005 have been revised to include both full-year and part-year households.
- The SHS is a stratified, multi-stage sample selected from the Labour Force Survey (LFS) sampling frame. Sample selection comprises two main steps: the selection of clusters (small geographic areas) from the LFS frame and the selection of dwellings within these selected clusters. The sample size of the SHS now ranges between 16,000 and 17,000 households, depending on the collection year (the sample is larger in odd years when the collection is carried out in the Territories).

## Limitations

- Starting with 2001, Survey of Household spending (SHS) data for Canada include the territories every second year. For the other years, Canada-level statistics include the 10 provinces only.
- Caution should be exercised when making year-to-year comparisons since changes may not be statistically significant. Special caution is necessary when using estimates from small sub-groups. For more information about data quality, see the *User Guide for the Survey of Household Spending, 2009*, Statistics Canada Catalogue no. 62F0026MWE, no. 6. (http://www.statcan.gc.ca/pub/62f0026m/62f0026m2010006-eng.htm).

## Data source

- Survey of Household Spending, Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3508.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3508&lang=en&db=imdb&adm=8&dis=2

B2

# Average university tuition fees

## Tables B.2.9 and B.2.11

This subset of Indicator **B2** includes data on average undergraduate and graduate university tuition fees, over time, in current dollars, at the Canada level and by province (Table B.2.9) and by field of study (Table B.2.11). These tables are based on data from the Tuition and Living Accommodation Costs for Full-time Students at Canadian Degree-granting Institutions (TLAC), which covers the academic year.

## Concepts and definitions

- Average **university tuition fees** represent the tuition fees charged to full-time Canadian students over the academic year; that is, September to April. Foreign students are not included. Average tuition fees for graduate studies (Master's and doctorates) are also presented. These average tuition fees do not include additional compulsory fees such as those for athletics, health services and student associations.

- The **fields of study** classification for **undergraduate** and **graduate** programs are adapted from the Classification of Instructional Programs (CIP), Statistics Canada's standard. The average tuition amounts for both types of programs are presented ranked from highest to lowest, based on the most recent year of data.

- Information is presented for the following 17 fields of study in both undergraduate and graduate programs : agriculture, natural resources and conservation; architecture and related services; business, management and public administration; dentistry; education; engineering; humanities; law, legal professions and studies; mathematics, computer and information sciences; medicine; nursing; other health, parks, recreation and fitness; pharmacy; physical and life sciences and technologies; social and behavioural sciences; veterinary medicine; and visual and performing arts, and communications technologies.

  The graduate programs also include Master of Business Administration (MBA) programs; specifically, Regular MBA and Executive MBA.

- All tuition fee amounts are presented in **current dollars**. To convert the current dollar amounts to constant dollar amounts for comparison over time, it is suggested that the September Consumer Price Index corresponding with the beginning of the university academic year (September to August) be used. For the index and further details on converting, see Table F.1.4.

## Methodology

- The Tuition and Living Accommodation Costs for Full-time Students at Canadian Degree-granting Institutions (TLAC) is an annual survey that was developed to collect student financial information (tuition fees, additional compulsory fees, and living accommodation costs) on all universities and degree-granting colleges in Canada.

- The target population of TLAC is all degree-granting institutions (universities and colleges) in Canada. The survey is a census with a cross-sectional design. Data are collected for all units of the target population; therefore, no sampling is done.

- A major redesign of the Tuition and Living Accommodation Costs for Full-time Students at Canadian Degree-granting Institutions (TLAC) questionnaire was implemented for the 2007/2008 collection cycle, when fields of study based on the Classification of Instructional Programs (CIP) were used. Executive MBA and Regular MBA, previously included in the "Business, management and public administration" category

were presented independently under the graduate programs; this change had a substantial impact. In 2010/2011, MBA programs were excluded from the national and provincial weighted averages to eliminate the impact of the high cost of these programs on the overall tuition fee averages for graduate programs.

- Using the most current enrolment data available, average tuition fees have been weighted by the number of students enrolled by institution and field of study.
- In Nova Scotia and in Quebec, for some years, the weighted averages take into account the different fees paid by in- and out-of-province students. In Ontario, adjustments to the calculation of weighted averages were introduced to account for fees that vary according to the year of study. In Saskatchewan, the weighted averages were calculated using the enrolments of 2004.
- All surveys are subject to errors. Only non-sampling errors apply to this survey given that no sampling process was used to produce the final results. Each year, data comparability is performed for each university and college, and any major discrepancies are investigated with the respondent. Tuition fees per program are available publicly at the institutional level.

## Limitations

- Since the distribution of enrolment across various programs varies from period to period, caution should be exercised when making historical comparisons.

## Data source

- Survey of Tuition and Living Accommodation Costs for Full-time Students (TLAC), Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3123.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3123&lang=en&db=imdb&adm=8&dis=2

B2

# University revenues

## Table B.2.12

This subset of Indicator **B2** presents the percentage distribution of university revenues, by source, at the Canada and provincial levels (Table B.2.12). Amounts are presented in current dollars, for the academic year.

## Concepts and definitions

- **Government revenues** at universities captures grants and contracts from government departments and agencies at the federal, provincial, municipal, and foreign levels.

  The **federal** portion of income is mainly from six major federal government agencies: the Social Sciences and Humanities Research Council of Canada (SSHRC), Health Canada (HC), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation (CFI), and Canada Research Chairs. Grants and contracts from all other federal government departments and agencies are also included.

  Grants and contracts at the **provincial** level include: income from provincial government departments and agencies, including provincial CFI matching grants; and provincial CFI matching income from the ministry responsible for the institution. "Income from other provinces," which includes grants from, and contracts with, provinces other than the province with jurisdiction, is also included.

  Grants from urban transit, communication and parking authorities are examples of income from **municipal** governments.

  Income from **foreign nations** includes grants from the National Endowment for Humanities, the National Institutes of Health, and the National Science Foundation.

- **Private revenues** at universities refer to those obtained from any source other than government, categorized as:

  **Student fees:** Payments obtained from students directly in the form of tuition (credit and non-credit courses) and other fees.

  **Non-government grants and contracts, donations and bequests:** Financial support received by colleges and universities from donors, bequests from wills, and contracts from sources other than government, the latter provided with specific stipulations.

  **Sales:** Institution revenue from sales of services and products.

  **Investment:** Revenue from dividends, bonds, mortgages, short-term notes, and bank interest. Includes the "Endowment" fund, a restricted fund (primarily donations), which cannot be spent. Investment income generated by endowments may be used for various purposes, which are often restricted by donors.

  **Miscellaneous:** Commissions, royalties, and fees from the use of institution-owned rights or properties, fees for services rendered, library and other similar fines, rentals, net gain or loss on the sale of fixed assets, and any type of revenue not identified under other forms of revenue.

## Methodology

- Data were drawn from the **Financial Information of Universities and Colleges Survey (FIUC)**, which was developed to provide financial information (income and expenditures) on all universities and affiliated institutions ("institution" may refer to universities, university-colleges, colleges, institutes and hospitals) in Canada. The survey is a census with a cross-sectional design, and the target population is all degree-granting institutions (universities and colleges) in Canada. Data are collected for all units of the target population; therefore, no sampling is done.

  The collection process for FIUC is conducted using two separate questionnaires:

  a) A questionnaire developed in conjunction with the Canadian Association of University Business Officers (CAUBO) that was designed and implemented by the CAUBO Finance Committee, which comprises financial administrators from six universities. These administrators meet twice a year and any proposed changes to the questionnaire and guidelines are discussed and implemented by the Committee.

  b) A non-CAUBO questionnaire, which is a virtual duplicate of the CAUBO questionnaire. Any modifications to the CAUBO questionnaire or guidelines are applied to the non-CAUBO questionnaire.

- Ontario CAUBO universities report to the province's own collection authorities (Council of Finance Officers — Universities of Ontario [COFO]). This information is sent to Statistics Canada, where a mapping and integration process converts the COFO data into the CAUBO format database.

- In 1999/2000, there was a break in the series, when major changes made to the CAUBO questionnaire and guidelines affected the historical comparability of the data; therefore, 1999/2000 was selected as the basis for comparison. Data from 1999/2000 onwards are comparable as they are based on the same guideline definitions.

- "University-colleges" are part of the FIUC universe made by CAUBO and as such are considered universities.

- Each university (and university-college) returns its questionnaire with accompanying audited financial statements, thus ensuring data accuracy. Nevertheless, each year a data comparability review is done for each institution and any major discrepancies are investigated with the respondent.

## Limitations

- Non-CAUBO data are amalgamated with the CAUBO data at the provincial level. Data for non-CAUBO institutions are not released publicly at the institution level. They can only be released at the provincial level.

- Comparisons of financial data over multiple years should be done with caution because of changes in generally accepted accounting principles that could alter the underlying data and changes in the Guidelines that govern the reporting of the data.

## Data source

- Financial Information of Universities and Colleges Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods," Statistics Canada Web site, survey 3121.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3121&lang=en&db=imdb&adm=8&dis=2

B2

# University expenditures

## Tables B.2.13 and B.2.14

This subset of Indicator **B2** includes university expenditures by type of expenditure, for Canada and the provinces. Amounts are presented in current dollars (Table B.2.13) and percentage distributions (Table B.2.14).

## Concepts and definitions

- The **capital expenditures** category captures the funds used to acquire capital assets reported as expenditures, based on the funds flow approach. Reports reflect the difference between capital asset expenditures as reported and the same amounts that have been capitalized during the year in the audited financial statements. This category also includes differences that result from installment payments and payments under lease purchase contracts where the lease is a capital lease for accounting purposes. Spending for the construction, renovation or major repair of buildings, and to replace or purchase new equipment is included.

- **Operating expenditures** include the following funds: general operating; special purpose and trust; sponsored research; and ancillary enterprises. Such expenditures reflect the items that an institution purchases and consumes within a year, and those the institution purchases on an ongoing basis. Costs directly attributable to instruction such as salaries, instructional aids, administrative support, teacher development, and costs for other educators such as counselors, are included. Operating expenditures refer to:

  **Compensation**, which includes gross salaries for educators and other staff (before deduction of taxes, contributions for retirement or health care plans, and other contributions or premiums for social insurance or other purposes), plus expenditure on retirement (actual or imputed expenditure by employers or third parties to finance retirement benefits for current educational personnel) and other non-salary compensation (fringe benefits). These statistics on compensation of university staff are categorized as:

  **academic salaries** – salaries paid to full- and part-time staff members engaged in instruction and research activities (includes deans, professors, associate professors, assistant professors and lecturers; also includes payments to staff members in the academic ranks for various types of leave such as administrative, academic or sabbatical).

  **other salaries and wages** - payments to all full- and part-time non-instructional (support) staff including, among others, technicians, teaching and research laboratory technicians, clerical and secretarial, professional and managerial, janitorial, trades and maintenance. Also includes payments to individuals who may hold an academic rank (or equivalent), but are engaged in activities other than instruction and research.

  **benefits** – includes the costs of institutions' contributions (with respect to salaries) for pensions (including payments for actuarial deficiencies and past service liability), group life insurance, salary continuance insurance, dental plans, Workers' Compensation, health taxes, tuition remission, Employment Insurance, and other costs of employee benefit programs. Also includes the cost of benefits paid during early retirement periods, as well as the cost of post retirement benefits.

The **other operating expenditures** category includes all non-salary related items such as spending on tuition fees and books, spending attributable to research and development, membership fees include fees paid by the institution to organizations such as AUCC and CAUBO, utilities, school services under contract, building operations and maintenance staff and so on. Other non-salary costs include those related to the maintenance of buildings as well as supplementary costs such as lunch programs and transportation and other expenses not covered elsewhere.

## Methodology

- "Data were drawn from the **Financial Information of Universities and Colleges Survey (FIUC)**, which was developed to provide financial information (income and expenditures) on all universities and affiliated institutions (institution may refer to universities, university-colleges, colleges, institutes and hospitals) in Canada. The survey is a census with a cross-sectional design, and the target population is all degree-granting institutions (universities and colleges) in Canada. Data are collected for all units of the target population; therefore, no sampling is done.

- The collection process for FIUC is conducted using two separate questionnaires:

  a) A questionnaire developed in conjunction with the Canadian Association of University Business Officers (CAUBO) that was designed and implemented by the CAUBO Finance Committee, which comprises financial administrators from six universities. These administrators meet twice a year and any proposed changes to the questionnaire and guidelines are discussed and implemented by the Committee.

  b) A non-CAUBO questionnaire, which is a virtual duplicate of the CAUBO questionnaire. Any modifications to the CAUBO questionnaire or guidelines are applied to the non-CAUBO questionnaire.

- Ontario CAUBO universities report to the province's own collection authorities (Council of Finance Officers — Universities of Ontario [COFO]). This information is sent to Statistics Canada, where a mapping and integration process converts the COFO data into the CAUBO format database.

- In 1999/2000, there was a break in the series, when major changes were made to the CAUBO questionnaire and guidelines, which affected the historical comparability of the data; therefore, 1999/2000 was selected as the basis for comparison. Data from 1999/2000 onwards are comparable as they are based on the same guideline definitions.

- "University-colleges" are part of the FIUC universe made by CAUBO and as such are considered universities.

- Each university (and university-college) returns its questionnaire with accompanying audited financial statements, thus ensuring data accuracy. Nevertheless, each year a data comparability review is done for each institution and any major discrepancies are investigated with the respondent.

- The percentages presented in Table B.2.14 were calculated using the current dollar values for Canada from Table B.2.13

## Limitations

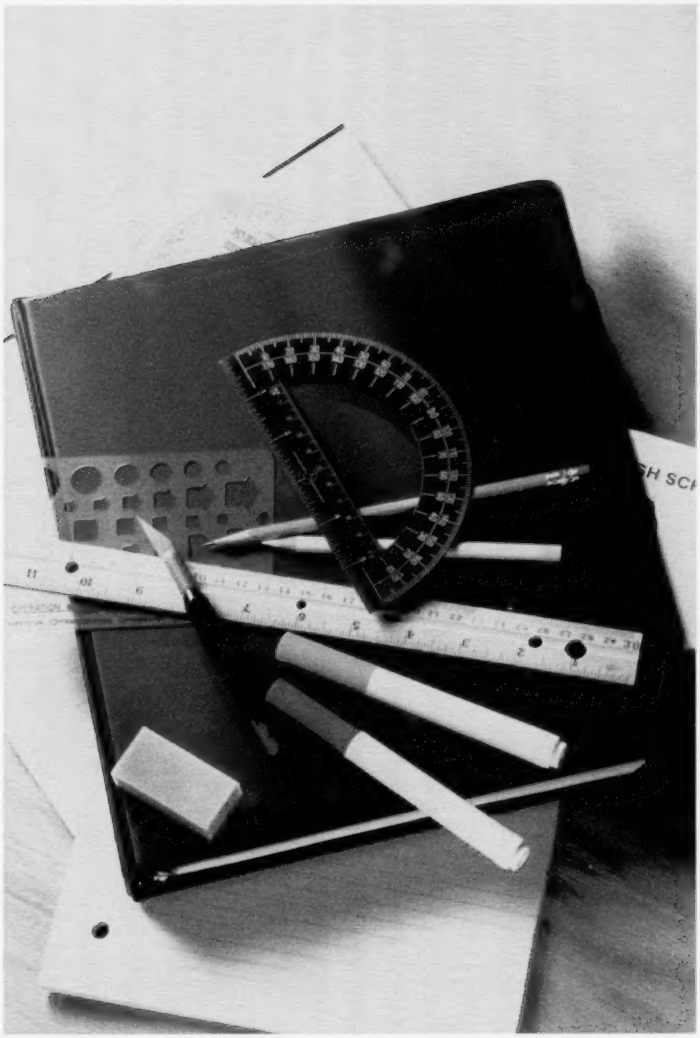
- While considerable effort is made to ensure that universities and colleges are preparing information in accordance with the prescribed guidelines, there are limitations in the comparability of the data because of differences in the underlying accounting practices followed by institutions. Institutional comparisons are subject to interpretation and clarification because of differences such as size, academic programs, structure, physical environment, management philosophy, and budgetary and accounting procedures. Therefore, comparisons of financial data over multiple years should be done with caution.

- When making inter-jurisdictional comparisons, the following should be taken into account: variations in sources of funding; differences in fiscal year-end dates, which can vary from March 31 to June 30, and variations in provincial policies and provincial funding responsibilities

## Data source

- Financial Information of Universities and Colleges Survey (FIUC), Statistics Canada. For more information, consult "Definitions, data sources and methods," Statistics Canada Web site, survey 3121.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3121&lang=en&db=imdb&adm=8&dis=2

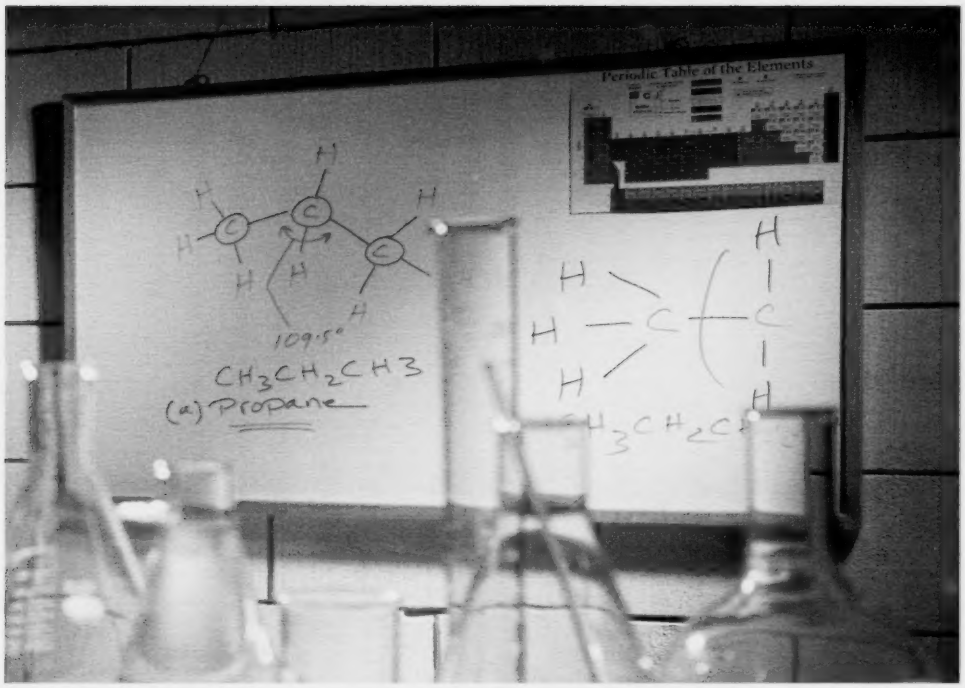


B3

# B3. Student debt

For information on the methodology of this indicator, please consult *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007.*

http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/81-582-g/81-582-g2008001-eng.pdf


Periodic Table of the Elements
109.5°
$CH_3CH_2CH_3$
(a) Propane

# C1. Early years and school readiness

## Tables C.1.1 and C.1.2

Indicator **C1** assesses the early years and school readiness of 4- and 5-year-old children by examining their health status (including any health limitations), participation in activities, exposure to reading and reading materials (Table C.1.1), and their language scores/vocabulary skills (Table C.1.2).

## Concepts and definitions

- The child's **general health** was classified as: excellent; very good; good; or fair or poor. The categories were read to the adult respondents who answered on behalf of their children in the National Longitudinal Survey of Children and Youth (NLSCY).

- This indicator also considers certain **health limitations** affecting the child. One set of questions asked about the child's day-to-day health and focused on his or her abilities relative to other children of the same age. The adult respondents were told that these same questions would be asked of everyone. This indicator considers the following: difficulty seeing; difficulty hearing; difficulty being understood when speaking; difficulty walking; and pain or discomfort. Pain or discomfort reflects the "no" responses to a question asking if the child is "usually free of pain or discomfort." These questions are part of an index called the Health Utility Index.

  Before being asked about chronic conditions, the adult who was responding on behalf of the child was told that this referred to "conditions that have lasted or are expected to last six months or more and have been diagnosed by a health professional" and was instructed to mark all that apply. This indicator presents information for long-term allergies and long-term bronchitis, as well as asthma. The questions for asthma were asked separately, and the information presented reflects the percentage of children aged 4 or 5 who had ever been diagnosed with asthma, not just those who had had as asthma attack in the 12 months before the survey interview.

- **Weekly physical activities outside of school hours** refers to weekly participation (ranging from most days to about once a week) in: sports that involved a coach or instructor (except dance, gymnastics or martial arts); lessons or instruction in organized physical activities such as dance, gymnastics or martial arts; lessons or instruction in music, art or other non-sport activities; and participation in any clubs, groups or community programs with leadership (for example, Beavers, Sparks or church groups). The adults who responded on behalf of these young children were asked to provide information on the children's physical activities for the 12-month period leading up to the survey interview.

- **Daily reading activities outside of school hours** reflects some of the information obtained from questions about literacy, including how often a parent read aloud to the child or listened to the child read (or try to read). Respondents were also asked how often the child looked at books, magazines, comics, etc. on his/her own, or tried to read on his/her own (at home).

- The **Peabody Picture Vocabulary Test-Revised (PPVT-R)** measures children's receptive vocabulary, which is the vocabulary that is understood by the child when he or she hears the words spoken. It is a "normed" test; that is, a child's performance is scored relative to that of an overall population of children at the same age level as the child. A wide range of scores represents an average level of ability, taking the age of the child into consideration. Scores below the lower threshold of this average range reflect

a delayed receptive vocabulary, and scores above the higher threshold demonstrate an advanced receptive vocabulary.

The PPVT-R is scaled to an average of 100. The range of average receptive vocabulary measured by the PPVT-R covers scores from 85 to 115. A score below 85 is considered to indicate delayed receptive vocabulary; a score above 115, advanced. Scoring is adjusted to reflect the different abilities of 4- and 5-year-olds. English and French scores are assessed separately and are not directly comparable.

## Methodology

- The **National Longitudinal Survey of Children and Youth (NLSCY)** is a long-term study of Canadian children that follows their development and well-being from birth to early adulthood. The survey was designed to collect information about factors influencing a child's social, emotional and behavioural development and to monitor the impact of these factors on the child's development over time.
- This indicator is based on nationally representative data for 4- and 5-year-olds from cycle 8 of the NLSCY, which was conducted in 2008/2009.
- The information presented was obtained from the NLSCY child component; specifically, the questions on child health, activities (sports, lessons, clubs, etc.) and literacy. Responses were provided by the person most knowledgeable (PMK) about the child, which is usually the mother.

## Limitations

- The NLSCY relies on the perceptions of the adult most familiar with the child to report on the child's general health and development, and such reports may not always be entirely objective or accurate.
- The following are possible sources of non-sampling errors in the NLSCY: response errors due to sensitive questions, poor memory, translated questionnaires, approximate answers, and conditioning bias; non-response errors; and coverage errors.

## Data source

- National Longitudinal Survey of Children and Youth (NLSCY), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 4450.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=4450&lang=en&db=imdb&adm=8&dis=2

# C2. Elementary-secondary school: enrolments and educators

## Tables C.2.1 through C.2.7

Information on enrolment in public schools at the elementary-secondary level (Table C.2.1), as well as on the number of full-time educators (Table C.2.2), is captured in Indicator **C2**. A student–educator ratio, which measures the total human resources available to students, is also presented (Table C.2.3), along with some characteristics of the educator work force (Table C.2.4, Table C.2.5, Table C.2.6 and Table C.2.7).

## Concepts and definitions

- **Public schools** are publicly funded elementary and secondary schools that are operated by school boards or the province or territory. They include all regular publicly funded schools (graded and ungraded), provincial reformatory or custodial schools and others that are recognized and funded by the province or territory. This indicator includes data for public elementary and secondary schools only and does not include private schools, federal schools and schools for the visually and hearing impaired.

- **Full-time equivalent (FTE)** enrolments represent the number of full-time students enrolled as of September 30 (or as close as possible thereafter) of the school year, plus the sum of part-time enrolments according to the portion of time spent in the classroom and for which students are funded (determined by the province or territory) (Table C.2.1).

- **Educators** refer to personnel involved in direct student instruction in a group or one-on-one basis. They include: classroom teachers; special education teachers, specialists (music, physical education); and other teachers who work with students as a whole class in a classroom, in a small groups in a resource room, or one-on-one inside or outside a regular classroom, including substitute/supply teachers. Chairpersons of departments who spend the majority of their time teaching and personnel temporarily not at work (e.g., for reasons of illness or injury, maternity or parental leave, holiday or vacation) should also be reported in this category. It excludes teacher's aides or student teachers as well as other personnel who are not paid for their employment.

  *School administrators* include all personnel who support the administration and management of the school such as principals, vice-principals and other management staff with similar responsibilities only if they do not spend the majority of their time teaching. They do not include those who are in higher level management; receptionists, secretaries, clerks and other staff who support the administrative activities of the school; and those who are reported under "other than educators".

  *Pedagogical support staff* includes professional non-teaching personnel who provide services to students to support their instruction program. It includes educational assistants, paid teacher's aides, guidance counselors and librarians. They do not include those in health and social support who should be reported under "other than educators".

- **Full-time equivalent (FTE) educators** is defined as the number of full-time educators as of September 30 (or as close as possible thereafter) of the school year, plus the sum of part-time educators according to their percentage of a full-time employment allocation (determined by the province or territory) (Table C.2.2). For example, if a normal full-time work allocation is 10 months per year, an educator who works for 6 months of the year would be counted as 6/10 (0.6) of a full-time equivalent, or an employee who works part-time for 10 months at 60% of full-time would be 0.6 of an FTE.

- **Full-time educators (headcount)** (Table C.2.4) refers to the number of educators as of September 30th (or as close as possible thereafter) of the school year who are responsible for providing services to the students.

- The **labour force** comprises the portion of the civilian, non-institutional population 15 years of age and over who form the pool of available workers in Canada. To be considered a member of the labour force, an individual must be working either full- or part-time or be unemployed but actively looking for work. The age distribution of the full-time and part-time employed labour force is presented in Table C.2.5.

## Methodology

- The **Elementary-Secondary Education Survey** (ESES, formerly called the Elementary-Secondary Education Statistics Project) is a national survey that enables Statistics Canada to provide information on enrolments (including minority and second language programs), graduates, educators and finance of Canadian elementary-secondary public educational institutions. Every year, Statistics Canada conducts a survey of all Departments/Ministries of education in all 10 provinces and 3 territories that collects data on enrolments, graduates, educators and finance data of the public elementary-secondary schools.

- The full-time equivalent (FTE) enrolment rate represents the time fraction spent in the classroom and for which students are funded. If this fraction is not known, an estimate should be used. For example, for junior kindergarten and kindergarten students taking a half-time program and where a half-time program is being funded, the FTE enrolment would be the headcount enrolment divided by two (0.5). If a student is only taking one-quarter of the usual course load and is funded on that basis, the FTE enrolment would be the headcount enrolment divided by 4, which is 0.25.

- The student–educator ratio (Table C.2.3) is calculated using full-time equivalent enrolment in Grades 1 to 12 (OAC in Ontario) and ungraded programs, plus pre-elementary full-time equivalent enrolment, divided by the full-time equivalent number of educators, both teaching and non-teaching.

- The Labour Force Survey data used to compare the age distribution of the overall full-time and part-time employed labour force with that of the full-time and part-time educator work force are based on a monthly average from September to August (Table C.2.5).

## Limitations

- Due to the nature of the Elementary-Secondary Education Survey (ESES) data collection, these data are updated on an ongoing basis and are therefore subject to further revisions.

- Care should be taken with cross-jurisdictional comparisons. The proportion of educators (comprising a mix of teachers, administrators and pedagogical support) differs in each jurisdiction.

- The student–educator ratio should not be taken as a measure of classroom size, nor should it be interpreted as a student–teacher ratio. Average classroom size depends not only on the number of teachers and students, but also on the hours of instructional time per week, the per-teacher hours worked, and the division of time between classroom instruction and other activities. The number of educators in this indicator includes both teaching and non-teaching educators (such as school principals, librarians, guidance counselors, etc.).

## Data sources

- Elementary-Secondary Education Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site survey 5102.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5102&lang=en&db=imdb&adm=8&dis=2

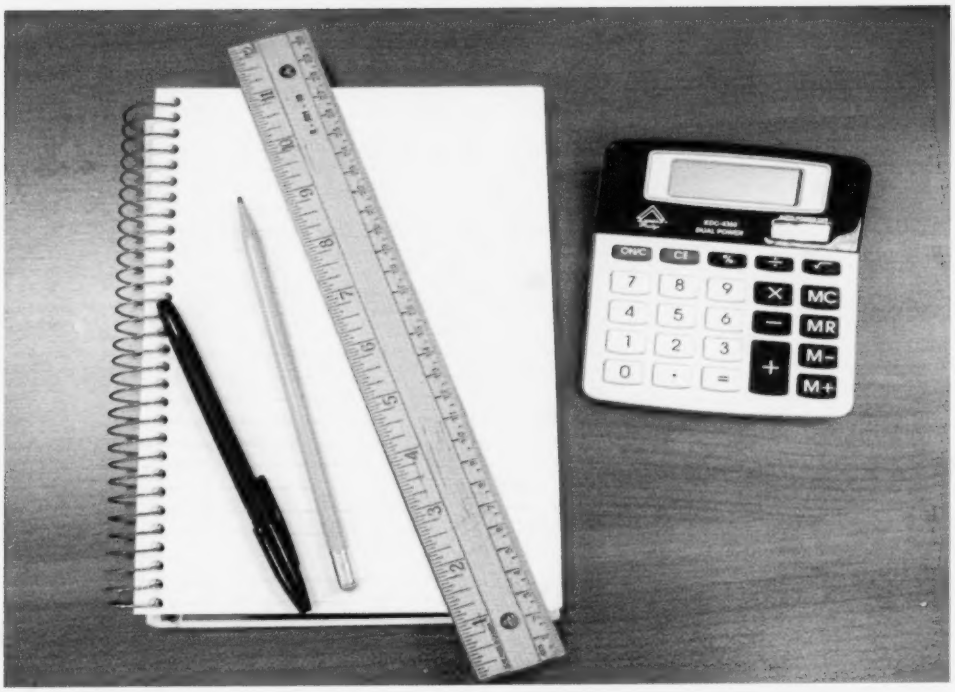
- Labour Force Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&lang=en&db=imdb&adm=8&dis=2

# C3. Secondary school graduation

For information on the methodology of this indicator, please consult *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007.*

http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/81-582-g/81-582-g2008001-eng.pdf


ON/C
CE
MC
MR
M-
M+

# C4. Student achievement

## Programme for International Student Assessment (PISA)

### Tables C.4.2, C.4.4, C.4.5, C.4.10 and C.4.17

Indicator **C4** reports on student achievement in three key areas—reading, mathematics, and science—and looks at changes in results over time. Performance was examined using results from the Programme for International Student Assessment (PISA), an international program of the Organisation for Economic Co-operation and Development (OECD).

This sub-indicator presents detailed information on the performance of 15-year-old students in Canada in the major PISA domain of reading, assessed in 2009, by looking at average scores and the distribution of students by proficiency levels on the combined reading scale (Table C.4.2) and at average scores on the reading subscales (Table C.4.17). It also compares performance over time in reading (Table C.4.4), science (Table C.4.5) and mathematics (Table C.4.10).

### Concepts and definitions

- The **Programme for International Student Assessment (PISA)** is a collaborative effort of member countries of the OECD along with partner countries to regularly assess youth outcomes, using common international tests, for three domains: reading, mathematics, and science. The goal of PISA is to measure students' skills in reading, mathematics, and science not only in terms of mastery of the school curriculum, but also in terms of the knowledge and skills needed for full participation in society.
- **Reading:** An individual's capacity to understand, reflect on, and engage with written texts, in order to achieve one's goals, to develop one's knowledge and potential and to participate in society.
- **Mathematics:** An individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen.
- **Science:** An individual's capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity.

### Methodology

- Internationally, around 470,000 students from 65 countries and economies participated in PISA 2009. PISA's target population comprises 15-year-olds who are attending school. In Canada, the student sample is drawn from Canada's 10 provinces; the territories have not participated in PISA to date. The PISA assessments are administered in schools, during regular school hours, in the spring. Students of schools located on Indian reserves were excluded, as were students of schools for those with severe learning disabilities, schools for blind and deaf students, and students who were being home-schooled. In 2009, the PISA assessment was a two-hour paper- and pencil-test.[1] It was administered in English and in French according to the respective school system.

1. For the first time in 2009, 20 countries elected to give their students additional questions via computer to assess their capacity to read digital texts. Canada did not administer these extra questions.

- While all three of the PISA domains are tested in each assessment, only one forms the major domain in each cycle, meaning it includes more assessment items than the others. In each cycle, two-thirds of testing time is devoted to the major domain. Reading was the major domain in 2000, mathematics in 2003, and science in 2006. With the repetition of the cycle, the major focus of the 2009 assessment was again on reading.
- Results for the major domains are available in a combined domain scale (which represents students' overall performance across all the questions in the assessment for that domain), as well as on the sub-domains that make up each overall scale. As fewer items are tested as part of the minor domains, only combined or overall results are available from PISA.
- In 2009, the reading sub-scales refer to three aspects of reading—accessing and retrieving information, integrating and interpreting, and reflecting and evaluating—and two text formats—continuous and non-continuous.

  **Reading aspect sub-scales:**

  **Accessing and retrieving**: Involves going to the information space provided and navigating in that space to locate and retrieve one or more distinct pieces of information.

  **Integrating and interpreting:** Involves processing what is read to make internal sense of a text.

  **Reflecting and evaluating:** Involves drawing upon knowledge, ideas or attitudes beyond the text in order to relate the information provided within the text to one's own conceptual and experiential frames of reference.

  **Reading text format sub-scales:**

  **Continuous texts:** Consist of documents that are formed by sentences organized into paragraphs. These include newspaper articles, essays, short stories, reviews or letters.

  **Non-continuous texts:** Consist of documents that combine several text elements such as lists, tables, graphs, diagrams, advertisements, schedules, catalogues, indexes or forms.
- In PISA, student performance is expressed as a number of points on a scale constructed so that the average score for the major domains for students in all participating countries was 500 and its standard deviation was 100. This means that about two-thirds of the students scored between 400 and 600. This average was established in the year in which the domain became the main focus of the assessment. Due to change in performance over time, the OECD average scores in PISA 2009 differ slightly from 500.
- PISA results can also be presented as the distribution of student performance across levels of proficiency. In PISA 2009, seven levels were used in reporting reading achievement, to identify the most difficult test items a student could answer; therefore, a student at one level could be assumed to have the ability to answer questions at all lower levels. To help in interpretation, these levels were linked to specific score ranges on the original scale. The seven levels are:
  - Below Level 1b (scores lower than or equal to 262 points)
  - Level 1b (scores higher than 262 but lower than or equal to 335 points);
  - Level 1a (scores higher than 335 but lower than or equal to 407 points)
  - Level 2 (scores higher than 407 but lower than or equal to 480 points)

- Level 3 (scores higher than 480 but lower than or equal to 553 points)
- Level 4 (scores higher than 553 but lower than or equal 626 points)
- Level 5 (scores higher than 626 but lower than or equal to 698 points) and
- Level 6 (scores higher than 698 points).

- According to the OECD, Level 2 can be considered a baseline level of proficiency, at which students begin to demonstrate the reading competencies that will enable them to participate effectively and productively in life. Students performing below Level 2 can still accomplish some reading tasks successfully, but they lack some fundamental skills that may prepare them to either enter the workforce or pursue postsecondary education.

- When comparing student performance among countries, provinces, or population subgroups, the PISA tables identify statistically significant differences. Statistical significance is determined by mathematical formulas and considers issues such as sampling and measurement errors. Sampling errors relate to the fact that performance was computed from the scores of random samples of students from each country and not from the entire population of students in each country. Consequently, it cannot be said with certainty that a sample average has the same value as a population average that would have been obtained had all 15-year-old students been assessed. Additionally, a degree of error is associated with the scores describing student skills as these scores are estimated based on student responses to test items.

- Standard errors and confidence intervals have been used as the basis for performing comparative statistical tests. The standard error expresses the degree of uncertainty around the survey results associated with sampling and measurement errors. The standard error is used to construct a confidence interval, which indicates the probability that a given error range (given by the standard error) around the sample statistic includes the population number. The PISA survey results are statistically different if the confidence intervals do not overlap. Furthermore, an additional t-test was conducted to confirm statistical difference.

- It is possible to compare changes in student performance over time in each PISA domain because a number of common test questions are used in each survey. However, the limited number of such common test items used increases the chances of measurement error. To account for this, an extra error factor, known as the linking error, is introduced into the standard error. The standard errors with linking errors should be used whenever comparing performance across assessments (but not when comparing results across countries/economies or subpopulation within a particular assessment).

- This indicator compares the performance of students in the 2009 PISA assessment with the first major assessment in each domain: reading in 2000 (Table C.4.4), mathematics in 2003 (Table C.4.10), and science in 2006 (Table C.4.5). It is not possible to include in this comparison the results from any minor assessments that took place before the first major (full) assessment of a domain. This is because the framework for the domain is not fully developed until the cycle in which it is assessed as a major domain. Consequently, the results measured as a minor domain beforehand are not comparable.

## Limitations

- Looking at the relative performance of different groups of students on the same or comparable assessments at different time periods shows whether the level of achievement is changing. Obviously, scores on an assessment alone cannot be used to evaluate a school system, because many factors combine to produce the average scores. Nonetheless, these assessments are one of the indicators of overall performance.

- Since data are compared for only two points in time, it is not possible to assess to what extent the observed differences are indicative of longer term trends.
- Statistical significance is determined by mathematical formulas and considers issues such as sampling. Whether a difference in results has implications for education is a matter of interpretation; for example, a statistically significant difference may be quite small and have little effect. There are also situations in which a difference that is perceived to have educational significance may not in fact have statistical significance

## Data sources

- Human Resources and Skills Development Canada, Statistics Canada, and Council of Ministers of Education, Canada. 2010. *Measuring Up: Canadian Results of the OECD PISA Study: The Performance of Canada's Youth in Reading, Mathematics and Science. 2009 First Results for Canadians Aged 15.* Statistics Canada. Catalogue no. 81-590-XIE-4.
- Organisation for Economic Co-operation and Development, 2010. *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science (Volume I).*
- For more information, consult "Definitions, data sources and methods," Statistics Canada web site, survey 5060.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5060&lang=en&db=imdb&adm=8&dis=2

C4

# Pan-Canadian Assessment Program (PCAP)

## Tables C.4.13, C.4.14, C.4.15, C.4.16, C.4.18, C.4.19 and C.4.20

Indicator **C4** reports on student achievement in three core learning areas (also referred to as domains): mathematics, science, and reading. It also examines the process of mathematics problem-solving. This sub-indicator examines performance by presenting results from the Pan-Canadian Assessment Program (PCAP), an initiative of the provinces and territories conducted through the Council of Ministers of Education, Canada (CMEC).

Detailed information on the performance of Grade 8 students in Canada[1] in the major PCAP domain of mathematics, assessed in 2010, is presented. Mean scores and the distribution of students by performance levels for the overall mathematics domain, as well as mean scores for the mathematics sub-domains and problem-solving process, are also outlined (Tables C.4.18 and C.4.19). The performance of students in science and reading in 2010 (Table C.4.13) is also shown, in addition to performance over time for reading (Table C.4.20). Results are presented by the language of the school system.

## Concepts and definitions

- The **Pan-Canadian Assessment Program (PCAP)** is a cyclical program of assessments that measures the achievement of Grade 8 students in Canada. It is conducted by the Council of Ministers of Education, Canada (CMEC). PCAP provides a detailed look at each of three core learning areas, or domains, in the years when it is a major focus of the assessment (reading in 2007, mathematics in 2010, and science in 2013), along with a minor focus on the other two domains. PCAP, which was first conducted in 2007, has replaced CMEC's School Achievement Indicators Program (SAIP). PCAP was designed to determine whether students across Canada reach similar levels of performance in these core learning areas at about the same age, and to complement existing assessments in each jurisdiction.

- **Mathematics:** Mathematics is assessed as a conceptual tool that students can use to increase their capacity to calculate, describe, and solve problems.

  The PCAP mathematics domain was divided into four sub-domains, which reflect traditional groupings of mathematics skills and knowledge: numbers and operations; geometry and measurement; patterns and relationships; and data management and probability. The mathematics assessment also allowed for the demonstration of five processes associated with how students acquire and use mathematics knowledge: problem-solving; communication; representation; reasoning; and connections.

- **Science:** The assessment of science is based on the concept of "scientific literacy" as the general goal of science curricula across Canada. Scientific literacy refers to how students use competencies to apply science-related attitudes, skills and knowledge, as well as to how they understand the nature of science, all of which enables them to conduct inquiries, solve problems, and make evidence-based decisions about science-related issues.

- The PCAP concept of scientific literacy assumes that students have knowledge of the life sciences, physical sciences, and earth and space sciences, as well as an understanding of the nature of science as a human endeavour.

- **Reading:** Reading is considered a dynamic, interactive process during which the reader constructs meaning from texts. The process of reading involves the interaction of reader, text, purpose and context, before, during, and after reading.

1. In Quebec, Secondary II is the equivalent of Grade 8.

While all three of the PCAP domains are tested in each assessment, each cycle places a major focus on only one domain, meaning it will include more assessment items than the other two. PCAP has been, and will be, administered to students as follows:

| Domain focus | 2007 | 2010 | 2013 |
|---|---|---|---|
| Major | Reading | Mathematics | Science |
| Minor | Mathematics | Science | Reading |
| Minor | Science | Reading | Mathematics |

## Methodology

- Approximately 32,000 Grade 8 students from Canada's 10 provinces and Yukon participated in PCAP 2010. The Northwest Territories and Nunavut have not yet participated in the PCAP assessments.
- When PCAP began in 2007, its target population was all 13-year-old students. In 2010, the target was modified to capture all Grade 8 students, regardless of age. This simplified the selection of students and reduced disruptions to the schools and in the classrooms. In 2007, 13-year-old students accounted for most of the PCAP sample, although these students may not have all been in Grade 8 at the time—some could have been in either Grade 7 or Grade 9.
- The following process was used to select PCAP participants:
    - The random selection of schools from each jurisdiction, drawn from a complete list of publicly funded schools provided by the jurisdiction.
    - The random selection of Grade 8 classes, drawn from a list of all eligible Grade 8 classes within the school.
    - The selection of all students enrolled in the selected Grade 8 class.
    - When intact Grade 8 classes could not be selected, a random selection of Grade 8 students.
- The PCAP participation rate was over 85% of sampled students. The school determined whether or not a student could be exempted from participating in the PCAP assessment. Students were excused: from the assessments if they had, for example: functional disabilities; intellectual disabilities; socio-emotional conditions; or limited language proficiency in the target language of the assessment.
- The PCAP structure was designed to align with that used for the Programme for International Student Assessment (PISA), which is conducted by the Organisation for Economic Co-operation and Development (OECD). A significant portion of the Grade 8 student cohort from PCAP 2010 will likely participate in the PISA 2012 assessment, when they will be around 15 years old. Since mathematics will be the major domain in PISA 2012, it will be possible to compare the performance patterns of the two assessments.
- PCAP 2010 tested approximately 24,000 students in English, and about 8,000 students in French. The results for students in the French school system were reported as French language, and the results for students in the English school system were reported as English language. The overall results for a jurisdiction represent those for students in both systems. Results for French immersion students who wrote in French were calculated as part of the English results since these students are considered part of the English-language cohort. (Caution is advised when comparing achievement results based on assessment instruments that were prepared in two different languages. Despite extensive efforts to

produce an equivalent test in both languages, each language has unique features that may make direct comparisons difficult.)

- Results for the major domains are available in an overall domain scale (which represents students' overall performance across all the questions in the assessment for that domain), as well as on the sub-domains that make up each overall scale. As fewer items are tested as part of the minor domains, only combined or overall results are available from PCAP.

- When scores obtained from different populations and on different versions of a test are compared over time, a common way of reporting achievement scores that will allow for direct comparisons is needed. One such commonly used method numerically converts the raw scores to "standard scale scores". For PCAP 2010, raw scores were converted to a scale on which the average for the Canadian population was set at 500, with a standard deviation of 100. From this conversion, the scores of two-thirds of all participating students fell within the range of 400 to 600 points, which represents a "statistically normal distribution" of scores.

- Results for a major domain in PCAP can also be presented as the percentage of students who had different performance levels. Performance levels represent how well students were doing based on the cognitive demand and degree of difficulty of the test items. Cognitive demand is defined by the level of reasoning required by the student to correctly answer an item, from high demand to low demand; degree of difficulty is defined by a statistical determination of the collective performance of the students on the assessment. There were four levels of performance in the mathematics component of PCAP 2010:

    - Level 4 (scores higher than 668)
    - Level 3 (scores between 514 and 668)
    - Level 2 (scores between 358 and 513)
    - Level 1 (scores below 358)

- Level 2 represents the expected level of performance for Grade 8 students, and Level 1, a level below that expected of students in their Grade 8 level group. Levels 3 and 4 represent higher levels of performance. These definitions of the expected levels of performance were established by a panel of assessment and education experts from across Canada, and were confirmed as reasonable given the actual student responses from the PCAP assessments.

- When comparing student performance among provinces and territories, or across population sub-groups, statistically significant differences must be considered. Standard errors and confidence intervals were used as the basis for performing comparative statistical tests. The standard error expresses the degree of uncertainty around the survey results associated with sampling and measurement errors. The standard error is used to construct a confidence interval. The confidence interval represents the range within which the score for the population is likely to fall, with 95% probability. It is calculated as a range of plus or minus about two standard errors around the estimated average score. The differences between estimated average scores are statistically significant if the confidence intervals do not overlap.

- This indicator compares the performance of students in reading on the 2010 PCAP assessment with the first major assessment of this domain in PCAP 2007. It is not possible to compare the results from any minor assessments that took place before the first major (full) assessment of a domain because the framework for the domain is not fully developed until the cycle in which it is assessed as a major domain. Consequently, the results measured as a minor domain beforehand are not comparable.

- The 2007 results for reading may be compared with those from the 2010 assessment, but they should not be compared directly with the original 2007 results. The 2007 scores used for the comparison have been rescaled onto the 2010 metric using common items (also referred to as "anchor items") that link the two (2007 and 2010) reading assessments. Also, the 2007 scores are based on only those Grade 8 students who completed the test, and not on the complete 2007 population of 13-year-olds. In 2010, there may have been a range of ages for students in Grade 8.
- In addition to the assessment of students' knowledge and skills in mathematics, reading, and science, PCAP also administers accompanying contextual questionnaires to students, teachers, and schools.

## Limitations

- An examination of the relative performance of different groups of students on the same or comparable assessments at different time periods shows whether the level of achievement is changing. However, scores on an assessment alone cannot be used to evaluate a school system, because many factors combine to produce the average scores. Nonetheless, these assessments are one of the indicators of overall performance.
- Since data are compared for only two points in time, it is not possible to assess to what extent the observed differences are indicative of longer term trends.
- Statistical significance is determined by mathematical formulas and considers issues such as sampling. Whether a difference in results has implications for education is a matter of interpretation; for example, a statistically significant difference may be quite small and have little effect. There are also situations in which a difference that is perceived to have educational significance may not, in fact, have statistical significance.

## Data source

- *Pan-Canadian Assessment Program, PCAP-2010: Report on the Pan-Canadian Assessment of Mathematics, Science, and Reading*, Council of Ministers of Education, Canada (CMEC), 2011.

C5

# C5. Information and communications technologies (ICT)

## Tables C.5.1, C.5.6, C.5.7 and C.5.8

Indicator **C5** reports on computer and software availability in schools (Tables C.5.1 and C.5.6), computer use among students at school (Table C.5.7), and student self-confidence in performing computer tasks (Table C.5.8). Information is presented for Canada, the provinces, and selected member countries of the Organisation for Economic Co-operation and Development (OECD) using results from the OECD's 2009 Programme for International Student Assessment (PISA).

## Concepts and definitions

- Information for this indicator is obtained through the 2009 Programme for International Student Assessment (PISA), which evaluates the skills and knowledge of 15-year-old students that are considered to be essential for full participation in modern economies, and sheds light on a range of factors that contribute to successful students, schools, and education systems. Information on computer and software availability in schools is obtained through the PISA school context questionnaire in which principals provided information on the availability of computers at their schools and whether they felt a lack of computers or software hindered instruction. Information on computer use among students at school and student self-assessment of their confidence in performing computer tasks was obtained from the optional ICT familiarity component of the PISA student context questionnaire.

- The **number of computers per student** is often used as a proxy to indicate the technology available to students. It refers to the total number of computers available for educational purposes to students in schools in the national modal grade for 15-year-olds (Grade 10 or equivalent in Canada) divided by the total number of students in the modal grade.

- A **shortage or inadequacy of computers or software for instruction** was explored in the PISA 2009 school context questionnaire as another way of looking at student access to ICT resources. In this questionnaire, principals reported on their perceptions of whether their school's capacity to provide instruction was hindered by a shortage of computers or computer software for instruction. Schools are considered to have a shortage or inadequacy of computers or software for instruction when school principals reported that this situation was hindering instruction to "some extent" or "a lot". The principals' subjective perceptions of shortages should be interpreted with some caution, because cultural factors and expectations, along with pedagogical practices, may influence the degree to which principals consider shortages a problem. Perceptions of inadequacy may be related to higher expectations among principals for ICT-based instruction rather than fewer computers available for learning.

- **The Index of self-confidence in information and communications technologies high-level tasks** was constructed to summarize student's self-confidence in performing certain computer tasks. This index reflects a composite score based on students' indications of the extent to which they could perform the following five different types of technical tasks: edit digital photographs or other graphic images; create a database; use a spreadsheet to plot a graph; create a presentation; create a multimedia presentation. For each task there were four possible responses: I can do this very well by myself; I can do this with help from someone; I know what this means but I cannot do it; I don't know what this means. This index was constructed so that the average OECD student would have an index value of zero, and about two-thirds

of the OECD student population would be between -1 and 1. For this index, a negative score indicates a level of confidence that is lower than the average calculated for students across OECD countries. Students' subjective judgments of task competency may vary across jurisdictions. Each index is self-contained; that is, a jurisdiction's score on one index cannot be directly compared with its score on another.

- The **Index of computer use at school** was constructed to summarize how frequently students perform different types of ICT activities at school. This index reflects a composite score based on students' responses when asked how frequently they perform the following nine activities: chat on-line; use e-mail; browse the Internet for schoolwork; download, upload or browse material from the school Web site; post work on the school's Web site; play simulations; practice and do drills (e.g., for mathematics or learning a foreign language); do individual homework; and do group work and communicate with other students. For each activity there were four possible responses: never or hardly ever; once or twice a month; once or twice a week; every day or almost every day. This index was constructed so that the average OECD student would have an index value of zero, and about two-thirds of the OECD student population would be between -1 and 1. Index points above zero indicate a frequency of use above the OECD average. Each index is self-contained; that is, a jurisdiction's score on one index cannot be directly compared with its score on another.

- **The modal grade attended by 15-year-olds** is the grade attended by most 15-year-olds in the participating country or economy. In Canada, most 15-year-olds attend Grade 10 (or equivalent).

- **Students' socio-economic status** is measured by the PISA Index of Economic, Social and Cultural Status (ESCS). It is important to emphasize that this indicator presents information organized according to the socio-economic status of the student, not of the school attended by the student.

- The **PISA Index of Economic, Social and Cultural Status (ESCS)** provides a measure of the socio-economic status of the student. This index was constructed based on information provided by the representative sample of 15-year-old students who participated in the PISA student background questionnaire, in which information on students' backgrounds was obtained from their answers to a 30-minute questionnaire that covered topics such as educational background, family and home situation, reading activities, and school characteristics. The PISA ESCS index was derived from the following variables: the international socio-economic index of occupational status of the father or mother, whichever is higher; the level of education of the father or mother, whichever is higher, converted into years of schooling; and the index of home possessions, obtained by asking students whether they had a desk at which they studied at home, a room of their own, a quiet place to study, a computer to use for school work, educational software, a link to the Internet, their own calculator, classic literature, books of poetry, works of art (e.g., paintings), books to help them with their school work, a dictionary, a dishwasher, a DVD player, three other country-specific items, and the number of cellular phones, televisions, computers, cars and bathrooms at home. The rationale for choosing these variables is that socio-economic background is usually seen as being determined by occupational status, education, and wealth. As no direct measure of parental income or wealth was available from PISA, information on access to household items was used as a proxy as students would have knowledge of these items within the home. These questions were selected to construct the indices based on theoretical considerations and previous research. Structural equation modeling was used to validate the indices.

  Greater values on the Index of Economic, Social and Cultural Status (ESCS) represent a more advantaged social background, while smaller values represent a less advantaged social background. A negative value indicates that the socio-economic status is below the OECD mean. The index is divided into quarters based on students' values on the ESCS index. Therefore students in the bottom quarter are in the lowest quarter of students in the ESCS index, and students in the top quarter are in the highest quarter of students based on their ESCS value.

## Methodology

- The target population for PISA 2009 comprised 15-year-olds who were attending schools in one of Canada's 10 provinces; the territories have not participated in PISA to date. Students of schools located on Indian reserves were excluded, as were students of schools for those with severe learning disabilities, schools for blind and deaf students, and students who were being home-schooled.

- In 2009, PISA was administered in 65 countries and economies, including Canada and all other OECD member countries. Between 5,000 and 10,000 students aged 15 from at least 150 schools were typically tested in each country. In Canada, approximately 23,000 students from about 1,000 schools participated in the 10 provinces. This large Canadian sample was needed to produce reliable estimates for each province.

- The information for this indicator is obtained from certain responses to three contextual questionnaires that were administered along with the main PISA skills assessment: a student background questionnaire that provided information about students and their homes; a questionnaire on familiarity with ICT that was administered to students; and a questionnaire administered to school principals. The questionnaire framework that is the basis of the context questionnaires and the questionnaires themselves are found in *PISA 2009 Assessment Framework: Key Competencies in Reading, Mathematics and Science* (OECD 2010), available at www.oecd.org.

- All member countries of the OECD participated in the PISA 2009 main assessment (including the student and school background questionnaires that are a main source of data for this indicator), and 29 member countries chose to administer the optional ICT familiarity questionnaire. This indicator presents information for a subset of these participating countries; namely, the G-8 countries (Canada, France, Germany, Italy, Japan, the Russian Federation, the United Kingdom, and the United States) and nine selected OECD countries that were deemed to be among Canada's social and economic peers and therefore of key comparative interest (Australia, Denmark, Finland, Ireland, Korea, New Zealand, Norway, Sweden, and Switzerland).

- The statistics in this indicator represent estimates based on samples of students, rather than values obtained from the entire population of students in each country. This distinction is important as it cannot be said with certainty that a sample estimate has the same value as the population parameters that would have been obtained had all 15-year-old students been assessed. Consequently, it is important to measure the degree of uncertainty of the estimates. In PISA, each estimate has an associated degree of uncertainty, which is expressed through the standard error. In turn the standard error can be used to construct a confidence interval around the estimate—calculated as the estimate +/- 1.96 x standard error—which provides a way to make inferences about the population parameters in a manner that reflects the uncertainty associated with the sample estimates. Using this confidence interval, it can be inferred that the population parameter would lie within the confidence interval in 95 out of 100 replications of the measurement, using different samples randomly drawn from the same population.

- When comparing sample estimates among countries, provinces and territories, or population subgroups, statistically significant differences must be considered in order to determine if the true population parameters are likely different from each other. Standard errors and confidence intervals are used as the basis for performing comparative statistical tests. Results are statistically different if the confidence intervals do not overlap.

- In Table C.5.6, differences in the percentage of students whose principals reported a shortage or inadequacy of computers or software between the top and bottom quarters of the PISA Index of Economic, Social, and Cultural Status were tested for statistical significance at Statistics Canada's Centre for Education

Statistics. The testing method involved calculating the confidence intervals surrounding the percentage of students whose principals reported computer or software inadequacies for both the top and bottom quarters of the index. If these confidence intervals did not overlap, then the difference was determined to be statistically significant at the 95% confidence level.

## Limitations

- Some data previously presented in Indicator C5 of PCEIP are not available from PISA 2009 as some of the questions were not repeated, or the information is not comparable with that used in past iterations of the PISA assessment.
- The PISA background questionnaires that explored ICT topics were not designed to assess the quality of ICT use at school nor the integration of ICT in pedagogy and its impact on student's cognitive skills.
- The territories have not participated in PISA to date.

## Data sources

- Statistics Canada, Programme for International Student Assessment (PISA), 2009 database; Organisation for Economic Co-operation and Development (OECD), 2009 PISA database.

# SECTION D: Postsecondary education

D1

## D1. Postsecondary enrolment

### Registered apprentices

#### Tables D.1.1 through D.1.3

Overall, Indicator **D1** portrays postsecondary enrolment. This sub-indicator presents information on the number of registered apprentices in Canada, and in its provinces and territories (Table D.1.1), including breakdowns by sex and major trade group (Table D.1.2), and by age group (Table D.1.3).

#### Concepts and definitions

- Information on the number of **registered apprentices** is based on data provided by apprenticeship branches in the provinces and territories and includes all individuals registered in an apprenticeship program, whether or not they had been enrolled in any formal classroom training during the year. This information is collected through the **Registered Apprenticeship Information System (RAIS)**, which gathers information on individuals who receive training and those who obtain certification in a trade for which apprenticeship training is being offered; specifically, the number of registered apprentices taking in-class and on-the-job training in trades that have either Red Seal or non-Red Seal endorsement, and for which apprenticeship training is either compulsory or voluntary. The RAIS survey also compiles data on the number of provincial and interprovincial certificates granted to apprentices or trade qualifiers (challengers).[1]

  Provincial and territorial governments co-ordinate apprenticeship programs in their jurisdiction. Most of the apprentice's training time is spent on the job working with experienced tradespersons, usually over a period of three to four years. A portion of the apprenticeship program is spent in formal classroom instruction prior to or during their apprenticeship period.

- The numbers of registered apprentices are presented for the following 22 **major trade groups**, by sex: automotive service; carpenters; early childhood educators and assistants; electricians;[2] electronics and instrumentation; exterior finishing; food service; hairstylists and estheticians; heavy duty equipment mechanics; heavy equipment and crane operators[2]; interior finishing; landscape and horticulture technicians and specialists; machinists; metal workers (other); millwrights; oil and gas well drillers, servicers, testers and related workers; plumbers, pipefitters and steamfitters; refrigeration and air conditioning mechanics; sheet metal workers; user support technicians; welders; and other.[3] These 22 major trade groups comprise a special grouping that was created using the National Occupation Classification (NOC).

- The numbers and percentages of registered apprentices are provided for the following seven **age groups:** under 20; 20 to 24; 25 to 29; 30 to 34; 35 to 39; 40 to 44; 45 and over; and for those whose age was unknown.

1. "Trade qualifiers (challengers)" refers to individuals who receive a Certificate of Qualification in a trade for which apprenticeship is voluntary. This means that they did not register for or complete apprenticeship training, but they did succeed in obtaining certification within that trade.
2. Changes to the Emploi-Québec reporting decreased the number of registered apprentices in 2008, especially in the "Industrial electrician" and "Heavy equipment and crane operators" trades.-
3. "Other" consists of miscellaneous trades and occupations not classified elsewhere.

## Methodology

- The **Registered Apprenticeship Information System (RAIS)** survey is an annual census. Data are collected for all registered apprentices and trade qualifiers (challengers); no sampling is done. Response is mandatory and data are collected directly from respondents and extracted from administrative files. The information is requested in individual record format and each record represents a registered apprentice or trade qualifier (challenger). The reference period is the calendar year, and the collection period is February through September of the reference year.

- The RAIS collected aggregate data by trade programs from 1980 to 1990. It included information on the number of new registrations, total registrations, leavers, completions and certificates granted. In 1991, in response to requests for more information on individual apprentices, the survey began collecting additional information on sex and age and requested information in individual record format.

- In 2008, the RAIS underwent a major survey redesign, and a number of new data elements were added and requested from the jurisdictions. Some of the new data elements being requested relate to the number of technical and on-the-job hours completed by apprentices during their training.

- Beginning with the 2008 data, the RAIS used the National Occupation Classification (NOC) to create a special grouping of 22 major trade groups. All RAIS historical data have been revised to reflect these 22 groups.

## Limitations

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. As a result, when the data are summed or grouped, the total value may not match the sum of the individual values, since the total and subtotals are independently rounded. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

- The information on number and percentage distribution of registered apprentices that is presented by age group also includes an "age unknown" category, as age was not available for some records due to missing information.

## Data source

- Registered Apprenticeship Information System (RAIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3154.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3154&lang=en&db=imdb&adm=8&dis=2

# D1

## Colleges

### Tables D.1.4 and D.1.7

Overall, Indicator **D1** portrays postsecondary enrolment. This sub-indicator presents information on student enrolment in colleges, by sex, registration status and program type (Table D.1.4.1 and Table D.1.4.2). These counts are presented for full- and part-time students. The percentage of female enrolment relative to total full-time college enrolment, by program type, is also examined (Table D.1.7.1 and Table D.1.7.2). Data are presented for Canada, and for the provinces and territories.

### Concepts and definitions

- The information presented reflects **college enrolment**.[1] Counts represent the number of students who were enrolled in an educational activity on October 31st and thus present a snapshot of enrolments on that day.

  **Colleges** are created under the authority of either a province's *Colleges Act* or equivalent, or under a *Society/Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily to offer certificate, diploma, and transfer or continuing education and professional development programs requiring less than three years of full-time study. They are often circumscribed by government and often need to seek government approval to introduce new programs, especially degree programs. High school completion is generally required for admission.

  **College** refers to community colleges, CEGEPs (collège d'enseignement général et professionnel or college of general and vocational education in Quebec), technical institutes, hospital and regional schools of nursing, radiography, medical technology and health records, as well as establishments providing technological training in specialized fields.

- **Registration status** captures enrolment for full- and part-time students on the day of the snapshot. Since there is no commonly accepted definition for the registration status of full- and part-time students, it is defined by the reporting postsecondary institutions.

- Information is presented for the following **program types** offered at colleges:

  **Total enrolment, all programs**, for both part-time and full-time students, also includes the category "Other program levels," which is not presented in the tables. "Other program levels" includes "program levels not applicable" or "non-programs" (taking non-credit courses or taking courses without seeking a credential).

  **College certificate or diploma and other programs at the college level** includes college postsecondary programs; college post-diploma programs; collaborative degree programs; university transfer programs from a college or CEGEP (includes associate degrees); and college preliminary year courses.

  **Undergraduate** enrolment captures those programs leading to a bachelor's degree, an applied degree, a university preliminary year or pre-bachelor, or to an undergraduate-level certificate or diploma.

  **Graduate** portrays programs leading to a master's degree or other university graduate-level certificates or diplomas.

1. For information on **university enrolment**, please see the Handbook section "Postsecondary enrolments, universities."

## Methodology

- The data on college enrolments were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).

- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.

- The college data presented here exclude students enrolled in programs related to pre-employment, apprenticeship, basic training or skills upgrading, second language training, job readiness or orientation programs.

## Limitations

- From year to year, more institutions are reporting data using the Postsecondary Student Information System (PSIS) format. The institutions that report data using the PSIS format are asked to include students enrolled in non-programs, including non-credit activities, as well as undergraduate- and graduate-level enrolments. In general, this has resulted in institutions reporting a larger number of student enrolments. Starting in 2000/2001, enrolments from private non-subsidized institutions that were part of the PSIS survey were no longer included.

- These figures on college enrolment should not be compared with those published before PSIS was introduced in 2000. All PSIS data are subject to revision.

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

- The college enrolment figures for both sexes include enrolments for which sex was not reported; therefore, these figures may not match the totals obtained when the enrolments for males and females are added together.

- The denominator used to calculate the percentage of females relative to total full-time college enrolment excludes enrolments for which sex was not reported.

## Data source

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5017&lang=en&db=imdb&adm=8&dis=2

# D1

## Universities

### Tables D.1.5 and D.1.6

Overall, Indicator **D1** portrays postsecondary enrolment. This sub-indicator provides information on student enrolment in universities, by sex, registration status and program type (Table D.1.5). These counts are presented for full- and part-time students. The percentage of female enrolment relative to total full-time university enrolment, by program type, is also examined (Table D.1.6). Data are presented for Canada and the provinces (there are no universities in the territories).

### Concepts and definitions

The information presented reflects **university enrolment.**[1] Counts represent the number of students who were enrolled in an educational activity on December 1st (November 1st in Ontario) and thus present a snapshot of enrolments on that day.

- **Universities** are created under the authority of a province's *University Act* or equivalent, or under a *Society/ Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily for the purposes of offering degree programs and to conduct research. They generally have complete authority to set their own academic standards and priorities. Within the institution, the supreme authority on all academic policy is generally a body on which faculty predominate.

- **Registration status** captures enrolment for full- and part-time students on the day of the snapshot. Since there is no commonly accepted definition for the registration status of full- and part-time students, it is defined by the reporting postsecondary institutions.

- Information is presented for the following **program types** offered at universities:

  **Total enrolment, all programs**, for both full-time and part-time students, includes the following categories not presented in the tables: "trade/vocational and preparatory training certificate or diploma," "community college certificate or diploma or other community college level" and "other program levels." "Other program levels" includes "program levels not applicable" or "non-programs" (taking non-credit courses or taking courses without seeking a credential.

  **Undergraduate** enrolment captures those programs leading to a bachelor's degree, a first professional degree, an applied degree, university preliminary year or pre-bachelor, undergraduate level certificate or diploma, license undergraduate and licentiate or testamur.

  **Graduate** reflects enrolment in programs leading to a master's degree, an earned doctorate, post-doctoral program, master's qualifying year, university graduate level certificate or diploma, PhD qualifying year or probationary, internship (postgraduate medical education known as post-MD) and residency (medical, dental, veterinary).

### Methodology

- The data on university enrolments were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).

1. For information on **college enrolment**, please see the Handbook section "Postsecondary enrolments, colleges."

- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.

## Limitations

- From year to year, more institutions are reporting data using the Postsecondary Student Information System (PSIS) format. The institutions that report data using the PSIS format are asked to include students enrolled in non-programs. In general, this has resulted in institutions reporting a larger number of student enrolments.

- These figures on university enrolment should not be compared with those published before PSIS was introduced in 2000. Enrolments counts for 2004/2005 through 2007/2008 have been revised, and all PSIS data are subject to revision.

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

- The university enrolment figures for both sexes include enrolments for which sex was not reported; therefore, these figures may not match the totals obtained when the enrolments for males and females are added together.

- The denominator used to calculate the **percentage of females relative to total full-time university enrolment** excludes enrolments for which sex was not reported.

- Since 2005/2006, enrolments for University of Regina have not been available.

- The following institutions, previously colleges, now have the status of universities and are included in the 2008/2009 counts for British Columbia: Capilano University, Vancouver Island University, Emily Carr University of Art and Design, Kwantlen Polytechnic University and University of the Fraser Valley. The increase in enrolment for Canada in 2008/2009 was mainly due to the attribution of university status to these five colleges. Part of this increase in university enrolment was in "Trade/vocational and preparatory training certificate or diploma" and "Community college certificate or diploma or other community college level" programs.

## Data source

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5017&lang=fr&db=imdb&adm=8&dis=2

D2

# D2. Postsecondary completions and graduation rates

## Registered apprenticeship completions

### Tables D.2.1 and D.2.2

Overall, Indicator **D2** examines trends in postsecondary completions. This sub-indicator presents information on the number of individuals completing registered apprenticeship programs in Canada, and in its provinces and territories (Table D.2.1), including breakdowns by sex and major trade group (Table D.2.2).

### Concepts and definitions

- The information on **registered apprenticeship completions** is based on data provided by apprenticeship branches in the provinces and territories and includes registered apprentices who have completed their program and received either an interprovincial or provincial certificate, as well as trade qualifiers (challengers)[1] who have received a Certificate of Qualification. This information is collected through the Registered Apprenticeship Information System (RAIS), which gathers information on individuals who receive training and those who obtain certification in a trade for which apprenticeship training is being offered; specifically, the number of registered apprentices taking in-class and on-the-job training in trades that have either Red Seal or non-Red Seal endorsement, and for which apprenticeship training is either compulsory or voluntary. The RAIS survey also compiles data on the number of registered apprentices, which includes those still registered from the previous year (apprentices who have not yet completed and have not withdrawn from training) plus apprentices newly registered during the current year.

- The numbers of registered apprenticeship completions are presented for the following 22 **major trade groups**, by sex: automotive service; carpenters; early childhood educators and assistants; electricians;[2] electronics and instrumentation; exterior finishing; food service; hairstylists and estheticians; heavy duty equipment mechanics; heavy equipment and crane operators; interior finishing; landscape and horticulture technicians and specialists; machinists; metal workers (other); millwrights; oil and gas well drillers, servicers, testers and related workers; plumbers, pipefitters and steamfitters; refrigeration and air conditioning mechanics; sheet metal workers; user support technicians; welders; and other.[3] These 22 major trade groups comprise a special grouping that was created using the National Occupation Classification (NOC).

### Methodology

- The **Registered Apprenticeship Information System (RAIS)** survey is an annual census. Data are collected for all registered apprentices and trade qualifiers (challengers); no sampling is done. Response is mandatory and data are collected directly from respondents and extracted from administrative files. The information is requested in individual record format and each record represents a registered apprentice or trade qualifier (challenger). The reference period is the calendar year, and the collection period is February through September of the reference year.

1. "Trade qualifiers (challengers)" refers to individuals who receive a Certificate of Qualification in a trade for which apprenticeship is voluntary. This means that they did not register for or complete apprenticeship training, but they did succeed in obtaining certification within that trade.
2. Changes to the Emploi-Québec reporting decreased the number of registered apprentices in 2008, especially in the "Industrial electrician" and "Heavy equipment and crane operator" trades.
3. "Other" consists of miscellaneous trades and occupations not classified elsewhere.

- The RAIS collected aggregate data by trade programs from 1980 to 1990. It included information on the number of new registrations, total registrations, leavers, completions and certificates granted. In 1991, in response to requests for more information on individual apprentices, the survey began collecting additional information on sex and age and requested information in individual record format.
- In 2008, the RAIS underwent a major survey redesign, and a number of new data elements were added and requested from the jurisdictions. Some of the new data elements being requested relate to the number of technical and on-the-job hours completed by apprentices during their training.
- Beginning with the 2008 data, the RAIS used the National Occupation Classification (NOC) to create a special grouping of 22 major trade groups. All RAIS historical data have been revised to reflect these 22 groups.

## Limitations

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. As a result, when the data are summed or grouped, the total value may not match the sum of the individual values, since the total and subtotals are independently rounded. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

## Data source

- Registered Apprenticeship Information System (RAIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3154.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3154&lang=en&db=imdb&adm=8&dis=2

# D2

## Colleges

### Tables D.2.5 and D.2.9

Overall, Indicator **D2** examines trends in postsecondary completions. This sub-indicator provides information on the number of certificates, diplomas and degrees granted by colleges, by sex of graduate and program type (Table D.2.5) and by sex of graduate and field of study (Table D.2.9). Data are presented for Canada, and for the provinces and territories, by academic year.

### Concepts and definitions

- The information presented examines trends in postsecondary completions for **colleges**; that is, the **number of certificates, diplomas and degrees granted by colleges.**[1] All counts reflect the academic year as defined by the college, which generally begins on the first day after the end of the winter semester.

  **Colleges** are created under the authority of either a province's Colleges Act or equivalent, or under a Society/Societies Act or equivalent, with education as a primary purpose. These institutions are created primarily to offer certificate, diploma, and transfer or continuing education and professional development programs requiring less than three years of full-time study. They are often circumscribed by government and often need to seek government approval to introduce new programs, especially degree programs. High school completion is generally required for admission.

  **College** refers to community colleges, CEGEPs (collège d'enseignement général et professionnel or college of general and vocational education in Quebec), technical institutes, hospital and regional schools of nursing, radiography, medical technology and health records, as well as establishments providing technological training in specialized fields. Programs related to pre-employment, apprenticeship, basic training or skills upgrading, second language training, job readiness or orientation programs are not included in these college completion counts.

- Information is presented for the following **program types** offered at colleges:

  **College certificate or diploma and other credential at the college level** includes: college postsecondary programs; college post-diploma programs; collaborative degree programs; university transfer programs from a college or CEGEP (includes associate degree); and college preliminary year courses.

  **Undergraduate** refers to programs leading to a bachelor's degree, an applied degree, a university preliminary year or pre-bachelor, or to an undergraduate-level certificate or diploma.

  **Graduate** portrays programs leading to a master's degree or other university graduate-level certificates or diplomas.

- The **field of study** data are presented according to the Classification of Instructional Programs (CIP), the official classification used at Statistics Canada. The number of certificates, diplomas and degrees granted by colleges are presented for the following fields of study: agriculture, natural resources and conservation; architecture, engineering and related technologies; business, management and public administration; education; health, parks, recreation and fitness; humanities; mathematics, computer and information sciences; other; personal, protective and transportation services; personal improvement and leisure; physical and life sciences, and technologies; social and behavioural sciences and law; and visual and performing arts, and communications technologies.

1. For information on the **number of degrees, diplomas and certificates granted by universities**, please see the Handbook section "Postsecondary completions, universities."

## Methodology

- The data on the number of certificates, diplomas and degrees granted by colleges were extracted from the **Postsecondary Student Information System (PSIS),** a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).

- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.

- The college data presented here exclude completions from programs related to pre-employment, apprenticeship, basic training or skills upgrading, second language training, job readiness or orientation.

## Limitations

- From year to year, more institutions are reporting data using the Postsecondary Student Information System (PSIS) format. The institutions that report data using the PSIS format are asked to include undergraduate and graduate completions from colleges. In general, this has resulted in institutions reporting a larger number of completions. Starting in 1999/2000, completions from private non-subsidized institutions that were part of the survey were no longer included.

- These figures on college completions should not be compared with those published before PSIS was introduced in 2000. All PSIS data are subject to revision.

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

- The college completion figures for both sexes include individuals for whom sex was not reported; therefore, these figures may not match the totals obtained when the completions for males and females are added together.

## Data source

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5017&lang=en&db=imdb&adm=8&dis=2

# D2

## Universities

### Tables D.2.3 and D.2.8

Overall, Indicator **D2** examines trends in postsecondary completions. This sub-indicator provides information on the number of degrees, diplomas and certificates granted by universities, by sex of graduate and program type (Table D.2.3) and by sex of graduate and field of study (Table D.2.8). Data are presented for Canada and the provinces (there are no universities in the territories), and by calendar year.

### Concepts and definitions

- The information presented examines trends in postsecondary completions for **universities**; that is, the **number of degrees, diplomas and certificates granted by universities.**[1] All counts reflect the number of graduates in the calendar year.

  **Universities** are created under the authority of a province's *University Act* or equivalent, or under a *Society/ Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily for the purposes of offering degree programs and to conduct research. They generally have complete authority to set their own academic standards and priorities. Within the institution, the supreme authority on all academic policy is generally a body on which faculty predominate.

- Information is presented for the following **program types** offered at universities:

  **Undergraduate** refers to completions from programs leading to a bachelor's degree, a first professional degree, an applied degree, university preliminary year or pre-bachelor, undergraduate level certificate or diploma, license undergraduate and licentiate or testamur. It also captures "other undergraduate" programs; that is, university preliminary year or pre-bachelor, undergraduate certificate or diploma, license undergraduate and licentiate or testamur.

  **Graduate** portrays programs leading to a master's degree or an earned doctorate, as well as "other graduate," which includes master's qualifying year, university graduate certificate or diploma, PhD qualifying year or probationary, internship (postgraduate medical education known as post-MD) and residency (medical, dental, veterinary).

  The information for **college** programs outlines completion with a college certificate or diploma, or from other college-level programs (college post-diploma programs and collaborative degree programs) granted by universities.

  **Trade/Vocational** covers trade/vocational and preparatory training certificates or diplomas granted by universities.

- The **field of study** data are presented according to the Classification of Instructional Programs (CIP), the official classification used at Statistics Canada. The number of certificates, diplomas and degrees granted by colleges are presented for the following fields of study: agriculture, natural resources and conservation; architecture, engineering and related technologies; business, management and public administration; education; health, parks, recreation and fitness; humanities; mathematics, computer and information sciences; other; personal, protective and transportation services; personal improvement and leisure; physical and life sciences, and technologies; social and behavioural sciences and law; and visual and performing arts, and communications technologies.

1. For information on the **number of certificates, diplomas and degrees granted by colleges**, please see the Handbook section, "Postsecondary completions, colleges."

## Methodology

- The data on the number of degrees, diplomas and certificates granted by universities were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).

- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.

## Limitations

- These figures on university completions should not be compared with those published before PSIS was introduced in 2000. All PSIS data are subject to revision.

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

- The university completion figures for both sexes include individuals for whom sex was not reported; therefore, these figures may not match the totals obtained when the completions for males and females are added together.

- Since 2005, degrees, diplomas and certificates granted by the University of Regina have not been available.

- For Quebec institutions, degrees, diplomas and certificates granted do not include micro programs and attestations.

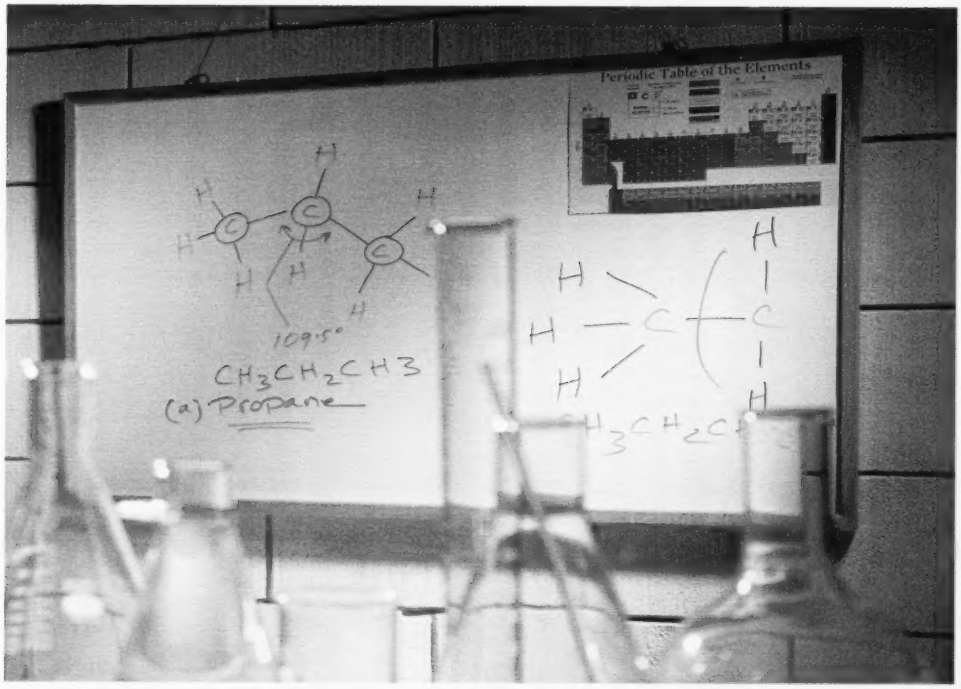
- The following institutions, previously colleges, now have the status of universities and are included in the 2008 completion counts for British Columbia: Capilano University, Vancouver Island University, Emily Carr University of Art and Design, Kwantlen Polytechnic University and University of the Fraser Valley. The increase in credentials awarded in 2008 in Canada is entirely due to the attribution of university status to these five colleges. Also, the majority of college and trade/vocational certificates and diplomas were awarded by these five former colleges.

- Due to the revision of the institutions included in the PSIS survey, the following were not included in the 2008 data: in Ontario, Institut de pastorale des Dominicains, Tyndale University College and Seminary, Redeemer University College, Royal Military College of Canada; in Alberta, Newman Theological College; in British Columbia, Vancouver School of Theology, Trinity Western University, and Seminary of Christ the King.

## Data source

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5017&lang=en&db=imdb&adm=8&dis=2


Periodic Table of the Elements
109.5°
$CH_3CH_2CH_3$
(a) Propane

# D3. University educators

## Tables D.3.1 through D.3.4

Indicator **D3** presents information on university educators in Canada and the provinces. It outlines the number of full-time university educators, providing breakdowns by academic rank and by sex (Table D.3.1). The male–female distribution of educators, by age, is also examined (Table D.3.2), as well as the age distribution of educators compared with that of the overall labour force (Table D.3.3). Average salaries, by academic rank and by sex, are also presented (Table D.3.4).

## Concepts and definitions

- **Full-time university educators** refers to all full-time teaching staff employed in universities in Canada.
- **Full-time** includes:

  staff appointed on a full-time basis whose term of appointment is not less than 12 months (including any staff member on leave);

  new appointees hired on a full-time basis (i.e., whose term of contract is greater than 12 months) and who are at the institution for less than 12 months in the first year; and

  staff who were appointed to teach 12 months or more and at a later date entered into a formal agreement with the institution to work on a reduced load basis. This situation usually arises with staff members who are approaching retirement.

- **Teaching staff** refers to:

  all teachers within faculties, whether or not they hold an academic rank;

  academic staff in teaching hospitals;

  visiting academic staff in faculties; and

  research staff who have an academic rank and a salary scale similar to teaching staff.

  In Table D.3.4, the definition of full-time university staff is similar to that used in Tables D.3.1, D.3.2 and D.3.3, but excludes staff who are on unpaid leave, all religious and military personnel or similar staff paid according to salary scales lower than those applying to regular/lay staff, and staff having a salary of zero or unreported.

- The following **academic ranks** are used:

  **Full professors**, referring to the most senior rank;

  **Associate professors**, the mid-level rank (requirements vary considerably between institutions and departments);

  **Assistant professors**, the entry-level rank; and

  **Other**, which refers to lecturers, instructors, and other teaching staff.

- **Gender gap** is defined as the average salary of female university educators as a percentage of the average of males.

## Methodology

- The information on full-time university educators is from the **University and College Academic Staff System (UCASS),** which conducts an annual survey that collects national comparable information on the number and socio-economic characteristics of full-time teaching staff at Canadian degree granting institutions (universities and colleges). The information is collected for each individual staff member employed by the institution as of October 1st of the academic year, presenting a snapshot as of that date.

- The percentage distribution of university educators by age and median age is based on educators for whom age is known.

- Salaries and salary scales of full-time teaching staff at Canadian universities are based on the annual rate of salary plus stipends. The data are in current dollars. The Consumer Price Index should be used to convert the data to constant dollar amounts for comparison over time. For the index and further details on converting, please see Table F.1.3 in the "Reference statistics" section.

- The Labour Force Survey data used to compare the age distribution of the overall full-time employed labour force with that of full-time university teaching staff are based on a monthly average from September to April.

## Limitations

- To ensure the confidentiality of responses, a random rounding process is applied to the data. As a result, when these data are summed or grouped, the total values may not match the sum of the individual values, since the total and subtotals are independently rounded. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

## Data sources

- University and College Academic Staff Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada website, survey 3101.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3101&lang=en&db=imdb&adm=8&dis=2

- Labour Force Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada website, survey 3701.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&lang=en&db=imdb&adm=8&dis=2

D4

# D4. Research and development

## Tables D.4.1 through D.4.5

Indicator **D4** presents information on research and development (R&D), focusing on the R&D performed by the higher education sector. The context for R&D activities carried out in the higher education sector is provided by examining total domestic expenditures on R&D as a percentage of GDP from an international and national perspective (Table D.4.1 and Table D.4.2). Expenditures on R&D by performing sector are outlined (Table D.4.3 and Table D.4.4), as are sources of funding for R&D expenditures in the higher education sector (Table D.4.5).

## Concepts and definitions

- The R&D data presented in this indicator are assembled based on guidelines presented in the Organisation for Economic Co-operation and Development's (OECD's) *Frascati Manual.*[1] These guidelines indicate that **research and development (R&D)** is considered to be any creative work undertaken on a systematic basis in order to increase the stock of scientific and technical knowledge and to use this knowledge in new applications. The central characteristic of R&D is an appreciable element of novelty and of uncertainty. New knowledge, products or processes are sought. The work is normally performed by, or under the supervision of, persons with postgraduate degrees in the natural sciences or engineering. An R&D project generally has three characteristics: a substantial element of uncertainty, novelty and innovation; a well-defined project design; and a report on the procedures and results of the projects.

- **Total domestic expenditures on R&D** (Tables D.4.1 through D.4.3) represent the total value of domestic expenditures on R&D of all organizations in the performing sectors (categorized as government, business enterprise, higher education, and private non-profit organizations). It includes R&D performed within a country and funded from abroad, but excludes payments for R&D performed abroad.

  The definition of total domestic expenditures on R&D in a provincial/territorial context is similar to that provided above. The expenditures are assigned to the province or territory in which the performing establishment is located. Personnel may live in an adjoining province or territory (e.g., the National Capital Region) and materials and equipment may come from another province or territory or country; these factors must be taken into consideration when using this statistic as a provincial/territorial indicator of R&D activity.

- **R&D performing sectors** are categorized as follows:

  **Federal government**, which includes departments and agencies of this government.

  **Provincial governments**, which include departments and agencies of provincial and municipal governments in Canada, as well as provincial research organizations.

  **Business enterprise** is composed of business and public enterprises, including public utilities and government-owned firms (e.g., Canadian National Railways and Ontario Hydro).

  **Higher education**, in reference to the pan-Canadian R&D statistics, covers universities and affiliated institutions such as research hospitals, research institutes, experimental stations, and clinics under the direct control of or administered by higher education establishments. Although OECD guidelines

1. The *Frascati Manual* is a document that lays out the methodology for collecting and using statistics about research and development in countries that are members of the OECD. For more information, see www.oecd.org.

request that R&D in the entire postsecondary sector be reported, data for Canada are limited to R&D activities in universities and affiliated institutions as data on R&D in colleges and similar institutions are not currently collected at Statistics Canada.

**Private non-profit** comprises charitable foundations, voluntary health organizations, scientific and professional societies, and other organizations not established to earn profits.

- **Source of funds for R&D in the higher education sector** are categorized as follows:

  **Federal government,** through the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC), the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation, Canada Research Chairs, and other federal departments and agencies.

  **Provincial governments**, including municipal governments.

  **Business enterprises**, including donations, bequests and contracts from individuals and businesses;

  **Private non-profit organizations**, including donations, bequests, and contracts from foundations and not-for-profit organizations.

  **Foreign sources**, which are funding entities located abroad.

  **Higher education sector**, which funds its own R&D using two revenue streams:

  *General funds:* These represent government transfers (or block grants) to higher education institutions that are used to support R&D activity. Although these funds essentially represent indirect government spending on R&D, for the purposes of pan-Canadian statistics, they are allocated to higher education funding due to the difficulty of categorizing these funds as provincial or federal.

  *Own revenue sources:* This refers to self-generated revenue of higher education institutions from sources such as tuition fees, investment income, revenue from sales of services and products by the institution, and license and patent incomes.

## Methodology

- Total domestic expenditures on R&D in Canada are estimated annually by Statistics Canada, by type of sector, source of funds, and science type using a series of surveys supplemented by modeling[2]. Beginning in 2007, expenditures for R&D performed by the federal government in the National Capital Region were included with the respective Ontario and Quebec totals. This revision has been made historically to 1988. Previously, federal government R&D expenditures in the National Capital Region were only included in the Canada total.

- Beginning with the 2009 reference year, R&D expenditures by provincial governments are not estimated for provinces that do not participate in Statistics Canada's survey of provincial scientific activities. Survey-based expenditures for the 2009 reference year are available for Newfoundland and Labrador, New Brunswick, Ontario, Manitoba, Alberta, and British Columbia. The increases in R&D expenditures by the provincial category in Saskatchewan in 2009 reflect data collection whereas in previous years, figures were estimated.

2. For more information, see *Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces*, Statistics Canada Catalogue no. 88-221-X.

- The expenditures for R&D performed by the higher education sector (Table D.4.4) are derived from an estimation model, which uses the following components:

  a) direct sponsored research;

  b) direct non-sponsored research (the time spent on R&D when it is undertaken as part of the teaching function, taking into account the portion of faculty time spent on this type of R&D and faculty salaries)

  c) indirect costs of sponsored and non-sponsored research;

  d) direct and indirect cost of R&D performed by affiliated hospitals not included elsewhere in the main data source.

- The main source of data for the above estimation model is the annual *Financial Information of Universities and Colleges* survey, conducted in conjunction with the Canadian Association of University Business Officers (CAUBO).[3]

- Sources of funds for expenditures on research and development in the higher education sector are derived from an estimation model. The data used in the model are obtained from the *Financial Information of Universities and Colleges* survey. These data on sources of funds for R&D conducted require two main refinements before they can be used: reconciliation of sector definitions and discrepancies between expenditure and income data.

- The data on R&D in the higher education sector are based on a revised estimation procedure first used for the 1998/1999 estimates.

- During the 2001/2002 estimation procedure, the one-time grant to universities awarded by the federal government to assist in indirect costs associated with research activities taking place at universities was included in the expenditures on R&D by the university sector. The estimation system had to be modified to ensure those costs were sourced to the federal government and not double-counted. In 2003/2004, the indirect costs grant for R&D in universities became an annual payment.

- Table D.4.1 compares Canada with other OECD member countries. To facilitate the international discussion, subsequent comparisons make use of the G-7 and the top four OECD countries in terms of the level of resources devoted to R&D relative to gross domestic product, as they thereby serve as useful reference points.

- R&D expenditures and source of funds data are shown in current dollars. To convert these current dollar data to constant dollar amounts for comparison over time, it is recommended that the Gross Domestic Product (GDP) Implicit Price Index be used for national and provincial conversions. A GDP deflator is the appropriate deflator for economy-wide statistics because it accounts for the cost of goods for households, for government and for industry. For the index and further details on converting, see Table F.1.2.

3. For more detail, see *Science Statistics*, vol. 35 no. 3 (October 2011 edition), Statistics Canada Catalogue no. 88-001-X.

- The OECD totals shown in Tables D.4.1, D.4.2 and D.4.3 reflect the OECD countries as a single entity as each total represents the sum of all values provided by each country. For example, in Table D.4.1, the OECD total for total domestic expenditures on R&D as a percentage of GDP was obtained by dividing the total domestic expenditures in all OECD countries by the total GDP across OECD countries.

## Limitations

- One of the most important issues relating to R&D concerns its definition. There remains some ambiguity in defining precisely what constitutes R&D; for example, in a continuing project, determining the precise point at which the project passes the boundary of R&D and becomes exploitation of a process or product for which it may be said that the R&D stage has been completed. This ambiguity is perhaps less serious in internal time series, where it may be expected that the year-to-year application of the definition by the same reporting unit will be consistent.

- Estimates of total domestic expenditure on R&D, like any other social or economic statistic, can only be approximately true. Different components are of different accuracy, sector estimates probably vary from 5% to 15% in accuracy. However, estimates of total domestic expenditure are sufficiently reliable for their main use as an aggregate indicator for science policy.

- The source for internationally comparative statistics on R&D is the OECD. OECD guidelines request that R&D in the entire postsecondary sector (defined as all universities, colleges of technology, and other institutes of postsecondary education, whatever their source of finance or legal status) be reported. However, data for Canada are limited to R&D activities in universities and affiliated institutions (including research hospitals) and degree-granting university colleges as data on R&D in colleges and similar institutions are not available.

- Although the OECD is working to improve the international reporting of R&D statistics, other comparability issues exist; therefore, it is important that the reader exercise caution in interpreting these statistics.

## Data sources

- *OECD StatsExtracts, Main Science and Technology Indicators database*, Organisation for Economic Co-operation and Development.

- *Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces*, Catalogue no. 88-221-X, Statistics Canada.

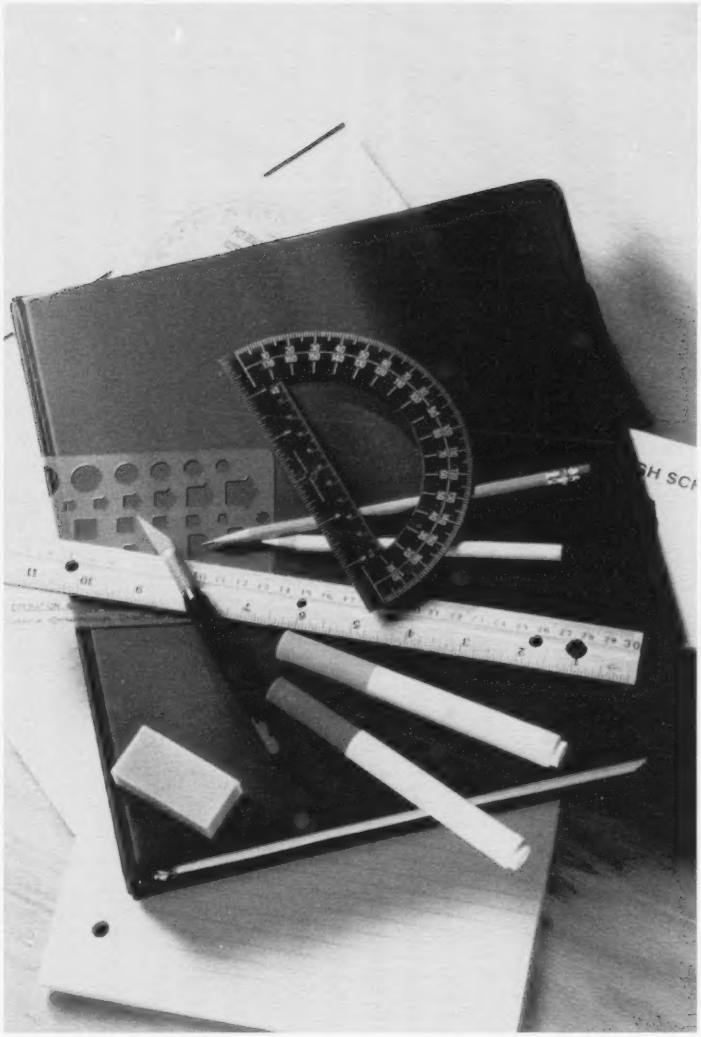
- *Science Statistics: Estimates of Research and Development Expenditures in the Higher Education Sector, 2009/2010*, vol. 35, no. 3 (October 2011), Catalogue no. 88-001-X, Statistics Canada.

- CANSIM Table 358-0001, *Gross domestic expenditures on research and development, by science type and by funder and performer sector, annual (dollars), data published in January 2012*, Statistics Canada.

# D5. Literacy

This section of the handbook will be updated in an upcoming issue. For information on the methodology of this indicator, please consult *Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program 2007*.

http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/81-582-g/81-582-g2008001-eng.pdf



# D6. Educational attainment

## Table D.6.3

This indicator examines educational attainment among the Canadian population aged 25 to 64,[1] often considered to be the "working-age" population. Data for the off-reserve Aboriginal population, the non-Aboriginal population, and for the total population are presented for Canada and for the provinces and territories (Table D.6.3).

## Concepts and definitions

- The **off-reserve Aboriginal population** refers to those persons who reported identifying with at least one Aboriginal group; for example, First Nations, Métis or Inuit. This is based on the individual's own perception of his or her Aboriginal identity.[2]

- **Educational attainment** refers to the highest level of education completed. For this indicator, which is based on data from the Labour Force Survey (LFS), educational attainment[3] is categorized as:

  **Less than high school:** No education or education below high school graduation.

  **High school:** High school graduation or some postsecondary education (not completed).

  **Trades:** Trades certificate or diploma from a vocational school or apprenticeship training.

  **College:** non-university certificate or diploma from a community college, CEGEP, school of nursing and similar programs at this level; university certificate below bachelor's degree.

  **University:** bachelor's degree; university degree or certificate above bachelor's degree.

## Methodology

- Statistics Canada's monthly **Labour Force Survey (LFS)** was developed following the Second World War to satisfy a need for reliable and timely data on the labour market. LFS data are used to produce the well-known unemployment rate as well as other standard labour market indicators (the employment rate and the participation rate). The survey covers the civilian, non-institutionalized population 15 years of age and over. It is conducted nationwide, in both the provinces and the territories. The survey does not cover: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of less than 2% of the Canadian population aged 15 and over.

- Labour Force Survey (LFS) estimates for Canada are derived using LFS results from the provinces; the territories are excluded. LFS revised the weights used for the Aboriginal population data which has resulted in the revision of several previously published estimates.

1. Please see the *Education Indicators in Canada: An International Perspective* series (Statistics Canada Catalogue no. 81-604-X) for information on educational attainment in an international context. In these reports, Indicator A1, "Educational attainment of the adult population", presents figures for Canada, the provinces and territories, along with the international averages provided by the Organisation for Economic Co-operation and Development. All of these data are categorized using the International Standard Classification of Education (ISECD).
2. See "Section 3, Dictionary of concepts and definitions" in the *Guide to the Labour Force Survey* (Statistics Canada Catalogue no. 71-543-G).
3. For more information, see "Educational attainment" in Section 3: Dictionary of concepts and definitions" in the *Guide to the Labour Force Survey* (Statistics Canada Catalogue no. 71-543-G).

- The data presented for this indicator are based on a 12-month average from January to December.
- The percentage of the population aged 25 to 64 who had attained a specific level of education was obtained by dividing the number of people aged 25 to 64 who had completed the given level of education by the total number of people aged 25 to 64, then multiplying by 100.

## Limitations

- The figures presented may not add up to totals because of rounding.
- While persons living on reserves and other Aboriginal settlements are not included in the sample for the provinces, the sample for the territories includes both Aboriginal and non-Aboriginal communities.
- Caution should be exercised in interpreting the provincial ratios and differences in ratios between provinces and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age groups or for cross-classified variables will be associated with larger variability.
- The data presented are not directly comparable with census-based data for the Aboriginal population.

## Data source

- Labour Force Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&lang=en&db=imdb&adm=8&dis=2

# SECTION E:
# Transitions and outcomes

E1

## E1. Transitions to postsecondary education

### Participation in education

#### Tables E.1.1, E.1.2.1 and E.1.2.2

Indicator **E1** considers youth transitions from high school to postsecondary education. This first indicator subset uses data from the Labour Force Survey (LFS) to present participation rates in education for 15- to 34-year-olds in Canada and the provinces (Table E.1.1, Table E.1.2.1 and Table E.1.2.2).

#### Concepts and definitions

- The Labour Force Survey (LFS) asks respondents about school attendance in the week before the survey, at a "school, college or university". For those who are students, information is collected on the type of school, and whether enrolment is full- or part-time, as designated by the educational establishment. For this indicator, the **participation rate** reflects the total enrolment in a primary/secondary, college, or university institution as a percentage of the total population in each age group.

- **Age** is collected for every household member in the survey, and the information on labour market activity is collected for all persons aged 15 and over.

#### Methodology

- The Labour Force Survey (LFS) is a monthly household survey of a sample of individuals who are representative of the civilian, non-institutionalized population 15 years of age or older. It is conducted nationwide, in both the provinces and the territories. Excluded from the survey's coverage are: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of approximately 2% of the population aged 15 and over. Canada-level LFS estimates are derived using the results of the LFS in the provinces. Territorial LFS results are not included in the Canada-level estimates, but are published separately.

- Participation rates are presented at the Canada level (excluding the territories) for single ages from 15 through to 29 (Table E.1.1). Rates for the provinces are presented for different age groups: 15 to 19, 20 to 24 and 25 to 29 (Table E.1.2.1), as well as 18 to 24, 25 to 29 and 30 to 34 (Table E.1.2.2). The LFS participation rate in education is based on a monthly average from September to April.

#### Limitations

- "Other" types of institutions are excluded from the total in Tables E.1.1 and E.1.2 and are not included in the three types of schools: primary or secondary school; community college, junior college or CEGEP; and university. For the "kind of school" variable, "Other - specify" is an option and includes: English as a second language or French language courses that do not qualify as high school, college or university education; police academies; computer and business skills programs other than those offered by colleges or universities; culinary, hairdressing or bartending schools; and special education that focuses on community living and life skills for students with special needs.

- It is unclear where trade certificate programs are placed in the "kind of school" variable. Trade schools could be coded to the 'community college, junior college or CEGEP group' or to 'Other - specify', depending on how the respondent answers the question and the interviewer's interpretation of the answer.
- Caution should be exercised in interpreting the provincial ratios and differences in ratios between provinces and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age-groups or for cross-classified variables will be associated with larger variability.
- For an explanation on estimates sampling variability and the method to evaluate this variability with standard error, please refer to the section on Data Quality in the *Guide to the Labour Force Survey* (http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=71-543-GWE&lang=eng).

## Data source

- Labour Force Survey, Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&lang=en&db=imdb&adm=8&dis=2

# E1

## Moving from high school to postsecondary education

### Tables E.1.4 through E.1.6

Indicator **E1** considers youth transitions from high school to postsecondary education. Tables E.1.4 to E.1.6 are based on data from the Youth in Transition Survey (YITS). Table E.1.4 examines the educational status of a cohort of young adults at various points in time, beginning when they were 17 years of age in Cycle 2 of YITS (in 2001) to when they were 25 years of age in Cycle 6 (in 2009). The subsequent tables focus on young adults who leave high school without having completed the requirements for high school graduation. Table E.1.5 looks at YITS respondents who were high-school non-completers at the age of 19 in 2003 and reports on the proportion of these who had obtained additional education by the time they were 25 years of age 2009. Table E.1.6, which is based on data from the two longitudinal cohorts of young adults surveyed by YITS (those who were 25 years of age in 2005 and those who were 25 years of age in 2009), examines if the more recent cohort of young adults was more or less likely to ever have left high school without graduating. Information is presented for Canada and the provinces.

### Concepts and definitions

- This indicator is based on data from the **Youth in Transition Survey (YITS)**, a longitudinal survey developed by Human Resources and Skills Development Canada and Statistics Canada. YITS surveyed two cohorts of youth every two years for a period of time. One cohort entered the survey when they were 15 years of age in 1999 (referred to as cohort A[1]); a second cohort began their participation in YITS when they were between the ages of 18 and 20 in 1999 (cohort B). YITS surveyed these two cohorts until the 2007 reference year (cohort B), and until 2009 cohort. It is important to note that in each cycle, the cohorts have aged two years. Table E.1.4 and Table E.1.5 present information for cohort A, while Table E.1.6 is based on data from both cohort A and cohort B.

- **Educational status** refers to a respondent's overall educational status as of the survey reference date. Education categories are mutually exclusive.

  **High school status** captures the following three groups:

  **High school non-completers**—respondents who had not completed the high school graduation requirements, and who were not attending high school as of the reference date;

  **High school continuers**—respondents who were continuing their studies at the high school level and who had not yet graduated as of the reference date; and

  **High school graduates**—respondents who have completed the minimum requirements for a high school graduation certificate, diploma or equivalent and have no postsecondary education.

- **Postsecondary education** is any education beyond high school, towards a diploma, certificate or degree that would take someone three months or more to complete. Trade programs offered through apprenticeship, vocational schools or private trade schools do not always require high school graduation. Such education is considered postsecondary.

1. The younger cohort also participated in the Programme for International Student Achievement (PISA) when they were 15 years of age in Cycle 1. PISA, an international assessment run by the Organisation for Economic Co-operation and Development, was designed to assess the literacy skills of youth in reading, mathematics, and science.

**Postsecondary education status** captures the following groups:

**Postsecondary non-completers**—respondents who had undertaken a postsecondary education but were no longer pursuing it and had never graduated from a postsecondary education institution;

**Postsecondary continuers**—respondents who were attending a postsecondary education institution but had not yet graduated;

**Postsecondary graduate non-continuers**—respondents who have graduated from a postsecondary institution (respondents who had completed the graduation requirements towards a diploma, certificate or degree) and were not pursuing additional education in a postsecondary institution; and

**Postsecondary graduate continuers**—respondents who have already graduated from a postsecondary institution and were attending an additional postsecondary program.

- **Additional education** (Table E.1.5) includes one or more of the following: eventual high school completion or its equivalent; some postsecondary education (those who had ever attended some form of postsecondary education without obtaining a certificate/diploma/degree; or postsecondary graduation.

- Respondents **who ever left high school** (Table E.1.6) are those who left elementary or high school at some point without having obtained the requirements for high school graduation, whether or not they later returned to education, either high school or postsecondary. As YITS asks respondents whether they ever left elementary or secondary school, it is not possible to differentiate between those who left elementary school and those who left secondary school. Further analysis, based on the age at which respondents last attended school, indicates that the numbers who left elementary school are very small.

## Methodology

- The target population for cohort A comprises individuals who were born in 1984 and in the 1999/2000 school year were attending any form of schooling in the provinces of Canada. These individuals were 15 years of age in 1999 (in Cycle 1) and 25 years of age in 2009, the reference year for Cycle 6. The sample for this cohort was school-based, with schools selected in the first stage of sampling, and students selected from these schools in the second stage of sampling. Schools in the territories and on Indian reserves were excluded. Some school- and student-level exclusions were made in the sampling. However, exclusions of all types represented, in total, less than 5% of the national desired target population.

- The target population for the older YITS cohort (cohort B) comprises residents of the 10 provinces of Canada who were born between 1979 and 1981. These individuals were aged 18 to 20 in 1999, the reference year for Cycle 1, and were between the ages of 24 and 26 in 2005, the reference year for Cycle 4. The sample design of cohort B was determined to a large degree by the sample design of the Labour Force Survey (LFS). As is the case with the LFS, this cohort excludes residents of Yukon, Nunavut, and the Northwest Territories, persons living on Indian reserves, full-time members of the Canadian Forces and inmates of institutions. These groups together represent an exclusion of approximately 2% of the population aged 15 and over, in the LFS.

- YITS is strictly a longitudinal survey. The initial samples of 15-year-olds and 18- to 20-year-olds selected at Cycle 1 were surveyed every two years for a number of cycles. As part of the YITS methodology, no attempts are made to top-up the samples from cycle to cycle to ensure a cross-sectional representation of these populations. Furthermore, YITS loses some of its existing sample with each survey cycle because non-respondents at a specific survey are not followed up for subsequent cycles of the survey. It is important

to note that, for this reason, only those respondents who were 15 years of age in 1999 (Cycle 1) and who remained in the survey in Cycle 6 were used to calculate the statistics for each reference year in Table E.1.4 and Table E.1.5.

- The implication of these factors along with changes in the population of Canada over time—primarily due to immigration and emigration—is that although the original sample for cohort A is representative of Canadians who were 15 years of age as of Cycle 1 of YITS (December 1999) and the original sample for cohort B is representative of Canadian who were 18 to 20 years of age in Cycle 1, these samples do not continue to be representative of a cross-section of the age cohorts in each subsequent YITS cycle. For example, in Table E.1.4, the sample is not representative of a cross-section of the overall population aged 17 (in December 2001), 21 (in December 2005), and 25 (December 2009

## Limitations

- Because cohort A and cohort B were sampled differently and because YITS loses some of its sample after Cycle 1, a direct comparison of the educational profile of these two samples at age 25 (Table E.1.6) should be viewed with caution.
- Although the initial sample selected for cohort A is representative of Canadians who were 15 years of age as of Cycle 1 of YITS (December 1999) and the initial sample selected for cohort B is representative of Canadian who were 18 to 20 years of age in Cycle 1, these samples do not continue to be representative of a cross-section of the age cohorts in each subsequent YITS cycle.
- Canada totals include those respondents who last attended high school in the territories, but data for the territories are not shown separately as there are only a few cases.

## Data source

- Youth in Transition Survey, Cycles 2 through 6 (for cohort A) and Cycle 4 (for cohort B), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 4435.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=4435&lang=en&db=imdb&adm=8&dis=2

PV
PMT
FV
OLD
NEW
CST
PRC
+/-
NOM%
7
TOTAL
%TOTAL
6
B.EVEN
2
INVEN
3
1
BEG/END
SHOW
LAST

# E2. Transitions to the labour market

## Students and work

### Tables E.2.1 through E.2.3

Indicator **E2** covers the transition from postsecondary education to the labour market. This first indicator subset uses Labour Force Survey (LFS) data to look at the extent to which students aged 15 to 29 combine school and work (Table E.2.1 and Table E.2.2), and at the distribution of this population group by type of institution attended, labour force status and age group(s) (Table E.2.3).

### Concepts and definitions

- The Labour Force Survey (LFS) asks respondents about school attendance in the week before the survey, at a "school, college or university," in addition to labour force participation information. Persons who are supplying services in the reference period, regardless of the quantity supplied, are classified as **employed**, while those who provide evidence that they are offering their labour services to the market (again regardless of quantity) are classified as **unemployed**. Those in the remainder of the population who are neither currently supplying nor offering their labour services are referred to as persons **not in the labour force.**

- **Employed** persons are those who: during the reference week, did any work at all at a job or business; that is, paid work in the context of an employer-employee relationship, or self-employment. It also includes unpaid family work, which is defined as unpaid work contributing directly to the operation of a farm, business or professional practice owned and operated by a related member of the same household; or had a job but were not at work due to factors such as own illness or disability, personal or family responsibilities, vacation, labour dispute or other reasons (excluding persons on layoff, between casual jobs, and those with a job to start at a future date).

- Given the concept of **unemployment** as the unutilized supply of labour, the operational definition of unemployment is based primarily on the activity of job search and the availability to take a job. In addition to being conceptually appropriate, job search activities can, in a household survey, be objectively and consistently measured over time. The definition of unemployed persons is therefore those who, during the reference week:

  (a) were on temporary layoff during the reference week with an expectation of recall and were available for work, or

  (b) were without work, had actively looked for work in the past four weeks, and were available for work, or

  (c) had a new job to start within four weeks from reference week, and were available for work.

  Persons are regarded as available if they reported that they could have worked in the reference week if a suitable job had been offered (or recalled if on temporary layoff), or if the reason they could not take a job was of a temporary nature such as: own illness or disability, personal or family responsibilities; they already had a job to start in the near future; or they were on vacation (prior to 1997, those on vacation were not considered available). Full-time students currently attending school and looking for full-time work are not considered to be available for work during the reference week. They are assumed to be looking for a summer or co-op job or permanent job to start sometime in the future, and are therefore not part of the current labour supply.

- **Age** is collected for every household member in the survey, and the information on labour market activity is collected for all persons aged 15 and over. For this indicator, those aged 15 to 29 are examined.
- **Labour force status** designates the status of the respondent vis-à-vis the labour market: a member of the non-institutional population 15 years of age and over is either employed, unemployed, or not in the labour force.

## Methodology

- Proportion of students working and distribution of the population by type of institution attended and labour force status data are presented at the Canada level for single ages from 15 through to 29, as well as a total 15 to 29 in Tables E.2.1 and E.2.3. Comparable data for the provinces are presented for three age groups: 15 to 19, 20 to 24, and 25 to 29, with a total 15 to 29 in Table E.2.3. The LFS participation rate in education is based on a monthly average from September to April.
- In Table E.2.3, type of institution attended and labour force status are categorized as: non-student not in the labour force, non-student unemployed, non-student employed, university employed, university not in the labour force, college employed, college not in the labour force, primary/secondary employed, primary/secondary not in the labour force and "other".
- The "other" category includes unemployed students attending university, college, primary or secondary schools and students attending other kinds of schools.
- The concepts of employment and unemployment are derived from the theory of the supply of labour as a factor of production and are based on those endorsed by the International Labour Organisation (ILO). The production referred to is in turn defined as those goods and services included in the System of National Accounts. For this reason, unpaid housework and volunteer work are not counted as work by the survey.
- For the purposes of measuring job search as part of the identification of the unemployed, the LFS uses a four-week search period although the reference period for identifying the employed is that of one week. The justification for the difference is that delays inherent in job search (for example, periods spent awaiting the results of earlier job applications) require that the active element of looking for work be measured over a period greater than one week if a comprehensive measure of job search is to be obtained.

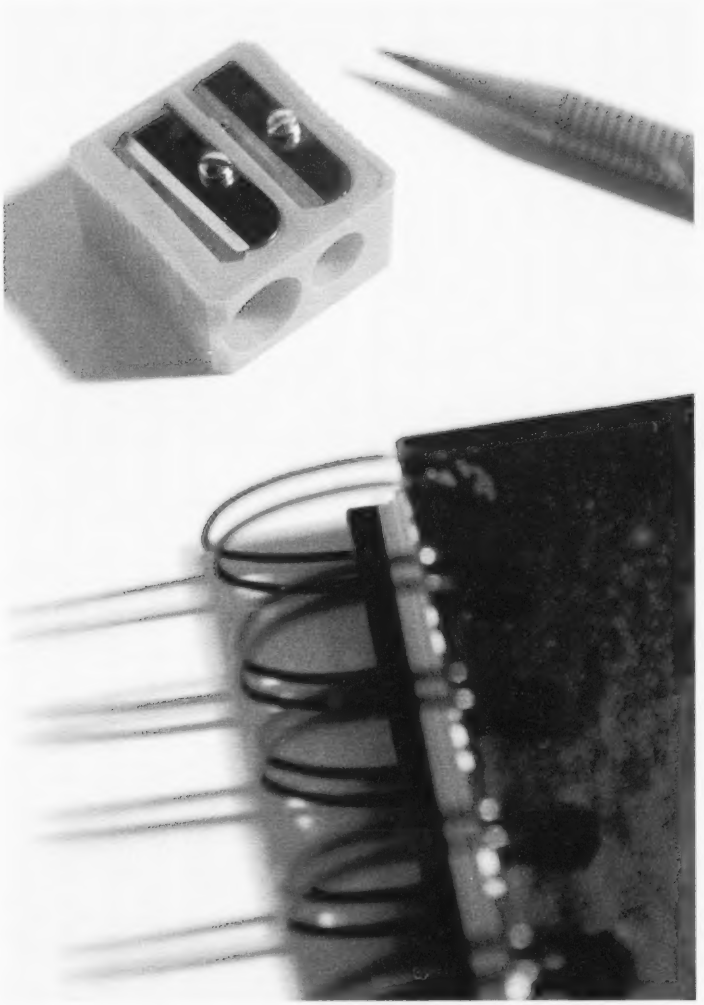
## Limitations

- Most industrialized countries, including Canada and the United States, subscribe to guidelines established by the International Labour Office for defining and measuring labour market status, including unemployment. However, the guidelines are, by design, rather imprecise, so that individual countries can interpret them within the context of their own labour markets. As a result, unemployment rates are not strictly comparable across all countries. The LFS has investigated in detail the measurement differences between the US and Canadian unemployment rates. The results show that measurement differences account for about a fifth of the gap between the US and Canada unemployment rates.
- Caution should be exercised in interpreting the provincial ratios and differences in ratios between provinces and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age-groups or for cross-classified variables will be associated with larger variability.
- For an explanation on estimates' sampling variability and the method to evaluate this variability with standard error, please refer to the section on Data Quality in the Guide to the Labour Force Survey (http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=71-543-GWE&lang=eng).

## Data source

- Labour Force Survey, Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&lang=en&db=imdb&adm=8&dis=2



# E3. Labour market outcomes

## Unemployment rates

### Tables E.3.1 through E.3.3

Overall, the **E3** indicator outlines labour market outcomes. This sub-indicator presents recent and historical Labour Force Survey (LFS) data on unemployment rates by educational attainment, providing information on trends for the population aged 15 and over at the Canada level (Table E.3.1). It also provides a comparison of trends in unemployment rates by educational attainment for 25- to 29-year-olds in Canada and the provinces (Table E.3.2). Data on unemployment rates among the off-reserve Aboriginal population aged 15 and over, by educational attainment, are presented for Canada (Table E.3.3).

### Concepts and definitions

- According to the Labour Force Survey (LFS), the **unemployment rate** refers to the number of unemployed persons expressed as a percentage of the labour force. The unemployment rate for a particular group (educational attainment, for example) is the number unemployed in that group expressed as a percentage of the labour force for that group.

  **Unemployed** people are those who, during the LFS reference week, were available for work and were either on temporary layoff, had looked for work in the past four weeks, or had a job to start within the next four weeks.

- Unemployment rates are presented for the following categories of **educational attainment**: all levels; less than high school; high school; college or trade; and university.

  **Less than high school:** No education or education below high school graduation.

  **High school:** High school graduation or some postsecondary education (not completed).

  **College or trade:** trade certificate or diploma from a vocational school or apprenticeship training; non-university certificate or diploma from a community college, CEGEP, school of nursing and similar programs at this level; university certificate below bachelor's level.

  **University:** bachelor's degree or university degree/certificate above bachelor's level.

- The **off-reserve Aboriginal population** refers to those persons who reported identifying with at least one Aboriginal group; for example, First Nations, Métis or Inuit. This is based on the individual's own perception of his or her Aboriginal identity.[1]

### Methodology

- Statistics Canada's monthly **Labour Force Survey (LFS)** was developed following the Second World War to satisfy a need for reliable and timely data on the labour market. LFS data are used to produce the well-known unemployment rate as well as other standard labour market indicators (the employment rate

1. See "Section 3: Dictionary of concepts and definitions" in the *Guide to the Labour Force Survey* (Statistics Canada Catalogue no. 71-543-G), (http://www.statcan.gc.ca/pub/71-543-g/2010001/part-partie3-eng.htm).

and the participation rate). The survey covers the civilian, non-institutionalized population 15 years of age and over. It is conducted nationwide, in both the provinces and the territories. The survey does not cover: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of less than 2% of the Canadian population aged 15 and over.

- The Aboriginal population data for 2007 through 2010 presented in Table E.3.3 are for Canada. The Labour Force Survey (LFS) estimates for Canada are derived using results from the provinces; the territories are excluded. The LFS has revised the weights used for the Aboriginal population data, which has resulted in the revision of several previously published estimates. Data for 2004, 2005 and 2006, are for Western Canada only (Manitoba, Saskatchewan, Alberta and British Columbia).
- The LFS unemployment rate is based on a monthly average from January to December. For 2004, the monthly average is from April to December (Table E.3.3)
- Starting in late 2003 in Alberta, and then in April 2004 for the rest of Western Canada, the LFS added questions to identify Aboriginal respondents living off-reserve with the goal of producing provincial labour market statistics on the Aboriginal population. The Aboriginal identity questions were also asked in the territories in 2004. As of January 2007, the question on Aboriginal identity has been extended to all provinces. Labour market data for the Aboriginal population have been available for all provinces since the fall of 2008.

## Limitations

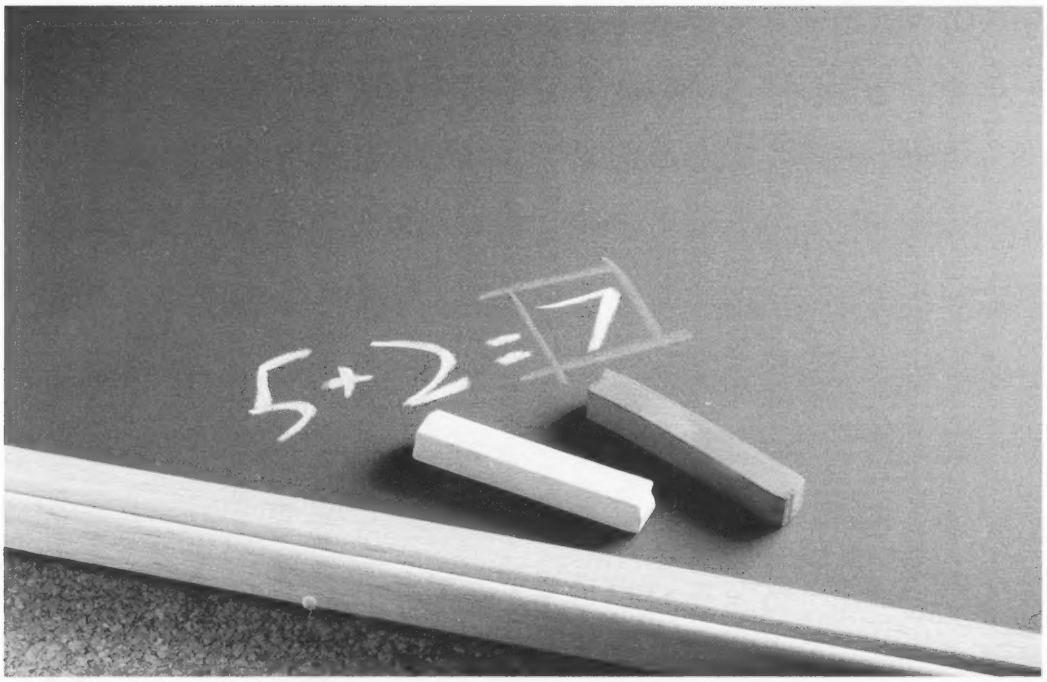
- The Labour Force Survey (LFS) excludes: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of approximately 2% of the population aged 15 and over.[2] The territories are excluded from the Canada total because the Labour Force Surveys conducted in the North are extended pilot projects. Difficulties exist with respect to reaching small communities in the territories, and as a result even within the pilot projects there are areas of the territories that are excluded. As well, since the sample design, rotation pattern and reliability criteria are different from those in the 10 provinces, estimates for the territories are not included with the provincial totals, but rather they are calculated and reported separately as a part of each of the extended projects.
- Indian reserves have historically been excluded from the LFS due to the serious challenges in contacting and interviewing potential respondents, with many of them living in remote locations not easily accessible to LFS interviewers given the short data collection period each month, and the large effort and cost associated with traveling to these locations.
- Caution should be exercised in interpreting the provincial ratios and differences in ratios between provinces and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age-groups or for cross-classified variables will be associated with larger variability.
- For an explanation on estimates sampling variability and the method to evaluate this variability with standard error, please refer to the section on "Data quality" in the *Guide to the Labour Force Survey* (http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=71-543-GWE&lang=eng)

2. See "Population coverage" in "Section 4: Survey methodology" in the *Guide to the Labour Force Survey* (Statistics Canada Catalogue no. 71-543-G, (http://www.statcan.gc.ca/pub/71-543-g/2010001/part-partie4-eng.htm).

## Data source

- Labour Force Survey, Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

  http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3701&lang=en&db=imdb&adm=8&dis=2


5+2=7

Appendix 1

# Structure of education and training in Canada

In Canada, education is the responsibility of the 10 provinces and 3 territories. While educational structures and institutions across the country are similar in many ways, they have been developed by each jurisdiction to respond to the particular circumstances, geographical situation, and historical and cultural heritage of the populations they serve. This appendix describes the various structures and organization of education and training in Canada.

## Pre-elementary programs

Pre-elementary programs—pre-Grade 1 education offered by public, private, and federal schools, as well as schools for the visually and hearing impaired—are available to young children, typically 4 or 5 years of age, in all jurisdictions.

Most jurisdictions offer one year of public pre-elementary programs, with Quebec, Ontario, Manitoba, Saskatchewan, and Alberta offering additional years (Figure 1). In most jurisdictions, pre-elementary programs in the year before Grade 1 are offered to children who turn 5 years of age by a certain date in the school year as specified in jurisdictional legislation. Attendance in these programs is optional in most jurisdictions, although it is mandatory in Nova Scotia and New Brunswick. The intensity of these programs varies; some jurisdictions offer full-day programs, some offer half-day programs, and some offer both.

In Quebec, one additional year of publicly funded pre-elementary programming is available to some 4-year-olds who have disabilities or who are from low-income families. In Ontario, the provision of an additional year of pre-elementary for 4-year-olds is dependent on the choice of the local school board, and funding is provided by the Ministry of Education. In Ontario, all school boards offer this program for their students. In Manitoba, one additional year of pre-elementary programming is offered at the discretion of each school division, and two school divisions currently provide this program, which is not funded by the Department of Education. In Saskatchewan, two additional years of pre-elementary programming are funded in schools in communities where a significant portion of pre-school children are not ready to participate fully in the learning opportunities offered to kindergarten and Grade 1 students. These programs are not mandatory and are not universal. Alberta also offers two additional fully funded years of pre-elementary programming, targeted to students with disabilities or to those who are considered talented or gifted.

In addition to publicly provided programs, in all jurisdictions, some private schools also offer one or more year(s) of pre-elementary programming. Private day-care programs or early childhood education programs, however, are not offered as part of the formal education systems and are not included in the data on pre-elementary programs.

## Elementary and secondary education

Public education is provided free to all Canadian citizens and permanent residents until the end of secondary school, which normally occurs at age 18. The ages for compulsory schooling vary from one jurisdiction to another. Generally, schooling is required from age 6 or 7 as of a certain date as specified in jurisdictional legislation (age 5 in New Brunswick and British Columbia) to age 16. In New Brunswick, Ontario, Manitoba and Nunavut, schooling is compulsory to the age of 18 or until high school graduation.

In most jurisdictions, elementary-secondary education consists of 12 years of study, Grades 1 through 12 (Figure 1). The only exception is Quebec, where the elementary-secondary system has 6 years of elementary school and 5 years of secondary school. Following a major change in policy, 2002/2003 was the last year for Grade 13 in Ontario. One immediate consequence of this change was the "double cohort" of students who entered the postsecondary system in 2003/2004 (comprising the last graduating class from the old system and the first graduating class from the new system).

The elementary-secondary continuum reflects different grade combinations in different jurisdictions, thus the point of transition between elementary and secondary school varies.

The organization of grades also varies by jurisdiction and can further vary at the local level within a jurisdiction. Elementary schools cover the first four to eight years of compulsory schooling. Afterwards, children may proceed to a middle school or to a junior high or intermediate school; these usually cover Grade 6 or 7 to Grade 8 or 9, or they may go directly to a secondary education program. In many northern and rural communities, one school building may house all levels, from kindergarten to Grade 11 or 12.

Depending on the jurisdiction, a variety of programs—vocational (job-training) as well as academic—is offered at the secondary level. Some jurisdictions offer dual credit courses that simultaneously give students both high school and postsecondary credits.

Secondary school diplomas are granted to students who pass the compulsory and optional courses of their programs.

Public funding at the pre-elementary and elementary-secondary levels is provided either directly via the provincial or territorial government or through a mix of provincial/territorial transfers and local taxes collected by the local government or by school boards that have the power to impose taxes. Private school funding comes primarily from fees and endowments, except in Quebec, which also provides funds for private schools (which have discretion over admission criteria). Manitoba and Alberta provide some provincial funding to private schools that meet specified provincial requirements. The federal government pays the tuition fees for Aboriginal children and for children of its employees who live on Federal Crown lands (e.g., National Defence, Agriculture and Agri-Food Canada, and Transport Canada).

## Postsecondary education

Once secondary school has been successfully completed, students may apply to college or university programs. Traditionally, enrolment in trade-vocational programs, such as apprenticeship or other programs geared towards preparation for employment in an occupation or trade, did not require graduation from secondary school. However, requirements have been evolving so that more and more programs, especially in trades dealing with advanced technology or having implications for public safety, now require high school graduation.

Apprenticeship training involves a contract between an apprentice and an employer, registered with the jurisdiction, in which the employer provides the apprentice with training and experience for a trade. Programs vary in length from two to five years, depending on the trade. Registered apprenticeship combines on-the-job experience with four- to eight-week periods of in-class training each year of the program. In most jurisdictions, the in-class portion is usually taken at a postsecondary institution during the apprenticeship training. However, in Quebec, the in-class training is taken prior to beginning an apprenticeship program.

There are over 200 registered trades in Canada, each with specific standards and training requirements outlined by each jurisdiction. In some of these trades, apprenticeship training and certification is compulsory to enter into and to practice the trade. In others, apprenticeship certification is not necessary, although an individual may voluntarily obtain it to indicate a certain level of competence in the trade. Compulsory and voluntary trades vary by jurisdiction; however, there are similarities across jurisdictions in that compulsory trades commonly include those with advanced technology or that involve public safety. As of 2009, the provinces and territories had agreed on interprovincial standards for 50 of the registered trades. In these 50 trades, candidates who achieve an agreed-upon standard qualify for a Red Seal endorsement and are allowed to work anywhere in Canada without further training or examination.

In Quebec, data relating to trade-vocational programs that are administered at the secondary level are reported at that level.

Postsecondary education is available in both government-supported and private institutions, some of which award degrees. A major distinction at an institutional level across all jurisdictions is made between "degree-granting" and "non-degree-granting" institutions. Degree-granting institutions—both public and private—have authority under provincial legislation to grant degrees, and include universities, university colleges, and some community colleges.

Universities typically offer four-year undergraduate programs leading to bachelor's degrees. Advanced degrees include master's degrees, generally requiring two years of study after a first degree, and doctoral degrees, which require three to five years of postgraduate study and research as well as a dissertation. Not all universities offer advanced degrees, particularly at the doctoral level. In addition to universities, university colleges are recognized degree-granting institutions that offer three- to four-year bachelor's programs. Both universities and university colleges also offer programs leading to diplomas and certificates, but the primary emphasis is on degree programs. A number of jurisdictions have also begun to give limited degree-granting authority to community colleges. These institutions, which still offer diploma and certificate programs, may also offer two-year associate degrees or three- to four-year applied degrees in an area of specialty particular to the institution.

A university or other institution may also be affiliated or federated with another university. Federated institutions are degree-granting institutions responsible for their own administration; however, under the federation agreement, the granting of degrees rests with the parent institution. Affiliated institutions have limited or no degree-granting authority, and the granting of degrees rests with the parent institution. A number of colleges have the authority to offer divinity degrees, but these colleges are not fully recognized as degree-granting institutions.

While the majority of degree-granting institutions are public, private institutions exist in a number of provinces. For many years, some private institutions have offered programs in divinity. Furthermore, private institutions that offer degree programs in liberal arts, business, and trades have become more common.

For the most part, the systems of public non-degree-granting institutions in Canada were created by provincial and territorial governments in the 1960s to provide labour market preparation programs as alternatives to the more theoretically oriented programs of universities. Depending on the province or territory, they are called colleges, regional colleges, centres, colleges of applied arts and technology, community colleges, institutes, schools, or, in Quebec, collèges d'enseignement général et professionnel (CEGEPs).

Public non-degree-granting institutions offer vocationally oriented programs in a wide range of semi-professional and technical fields, leading to diplomas and certificates and, in the case of Quebec, to diplomas and attestations. Diplomas are generally granted for successful completion of two- and three-year programs (three year programs in Quebec), while certificate programs usually take up to one year. In Quebec, attestations are awarded for the completion of shorter technical programs, and are generally viewed as the equivalent to certificates awarded in other jurisdictions.

In Quebec, students wishing to go on to university are generally required to successfully complete a two-year pre-university program offered by CEGEPs. In some circumstances, students with a technical-stream CEGEP diploma of college studies may undertake university studies.

Several college systems offer university transfer programs, typically the first two years of a university undergraduate program. These transfer programs are usually offered in conjunction with a university, where the remainder of the program would be completed.

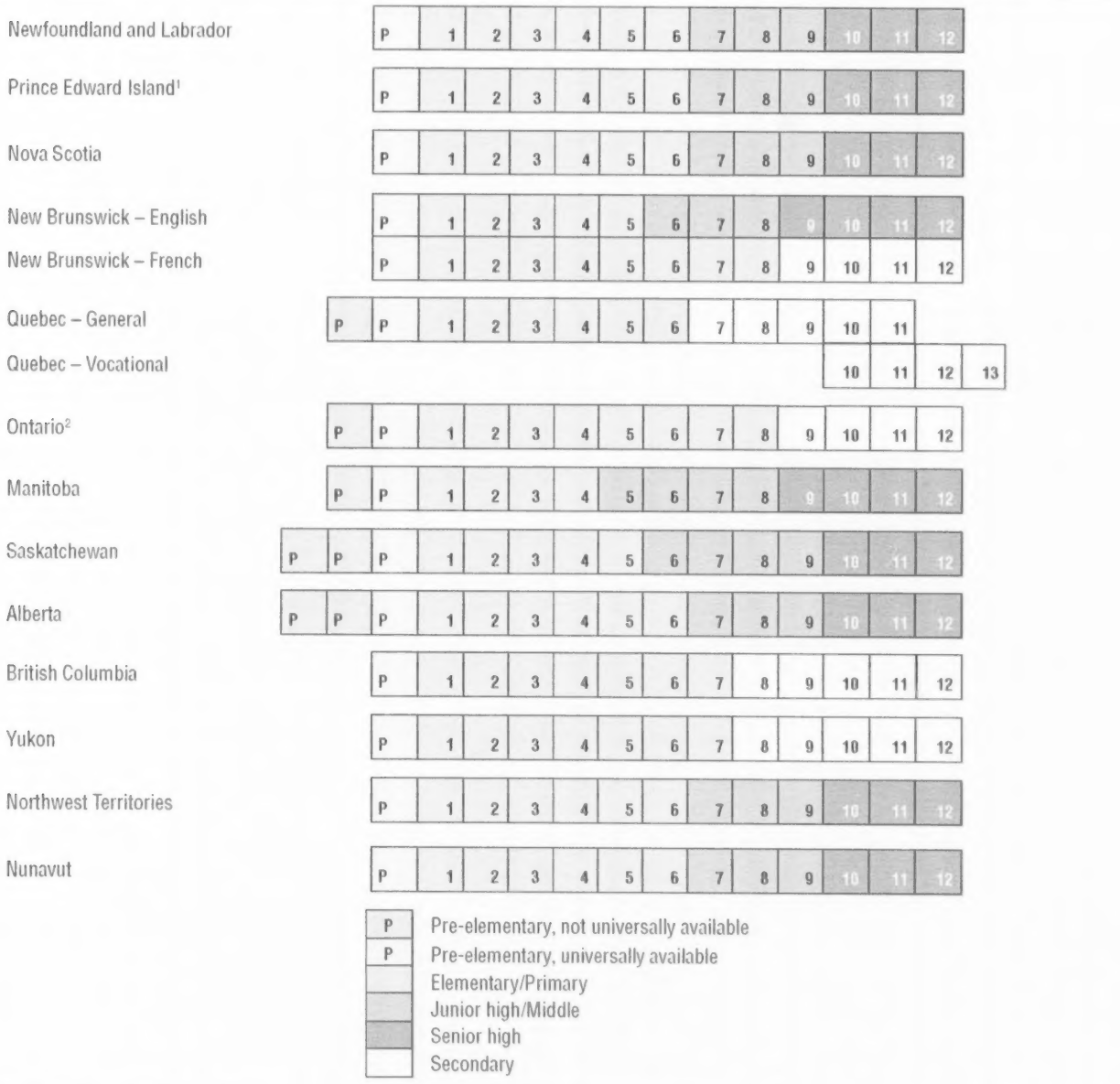
Private non-degree-granting institutions are subject to varying degrees of government regulation and can be classified in terms of the extent of government oversight. "Recognized institutions" are those that have been given authority to grant academic credentials by provincial or territorial governments through charters or legislation that provide mechanisms to ensure institutional and program quality. "Non-recognized, but licensed, institutions" are primarily monitored by governments with a view to consumer protection rather than institutional or program quality. Finally, "non-recognized, non-licensed institutions" are private institutions that are not regulated by government.

Private non-degree-granting institutions may be called "colleges", "institutes", "schools", or "academies" depending on the jurisdiction. Credentials issued include diplomas and certificates, and these programs tend to be much shorter and more intensive than programs in public institutions. In Quebec, private subsidized institutions may also offer two-year pre-university programs and three-year technical programs.

The source of funds at the postsecondary level will depend on the nature of the institution. For universities and public non-degree granting institutions, public funding comes directly from the provincial/territorial government (mostly in the form of operating and capital grants) and from the federal government (mostly for sponsored research). Private funding for those institutions is made up of tuition and other fees, donations (including bequests), investment, and non-government grants and contracts. Private non-degree-granting institutions receive very little or no public funding, except indirectly through support to students; funding for these private institutions comes mostly from tuition fees.

For a more detailed overview of postsecondary systems in Canada, see the Web site of the Canadian Information Centre for International Credentials (www.cicic.ca).

## Figure 1. Levels within pre-elementary and elementary-secondary schools, by jurisdiction




1. Prince Edward Island introduced its pre-elementary program in 2000/2001.
2. 2002/2003 was the last year for the Ontario Academic Course (Grade 13).

**Notes:** The elementary-secondary continuum reflects different grade combinations in different jurisdictions, thus the point of transition between elementary and secondary school varies. The organization of grades also varies by jurisdiction and can further vary at the local level within a jurisdiction. After elementary school, children may proceed to a middle school or to a junior high or intermediate school, or they may go directly to a secondary education program.

# Project team

| | |
|---|---|
| Réjean Doiron | Statistics Canada |
| Parvin Fahr | Statistics Canada |
| Michael Martin | Statistics Canada |
| Teresa Omiecinski | Statistics Canada |
| Barbara Riggs | Statistics Canada |

**Note:** Note of appreciation to staff of the Centre for Education Statistics at Statistics Canada for their invaluable contributions to this report, and to staff of Dissemination Division at Statistics Canada.